

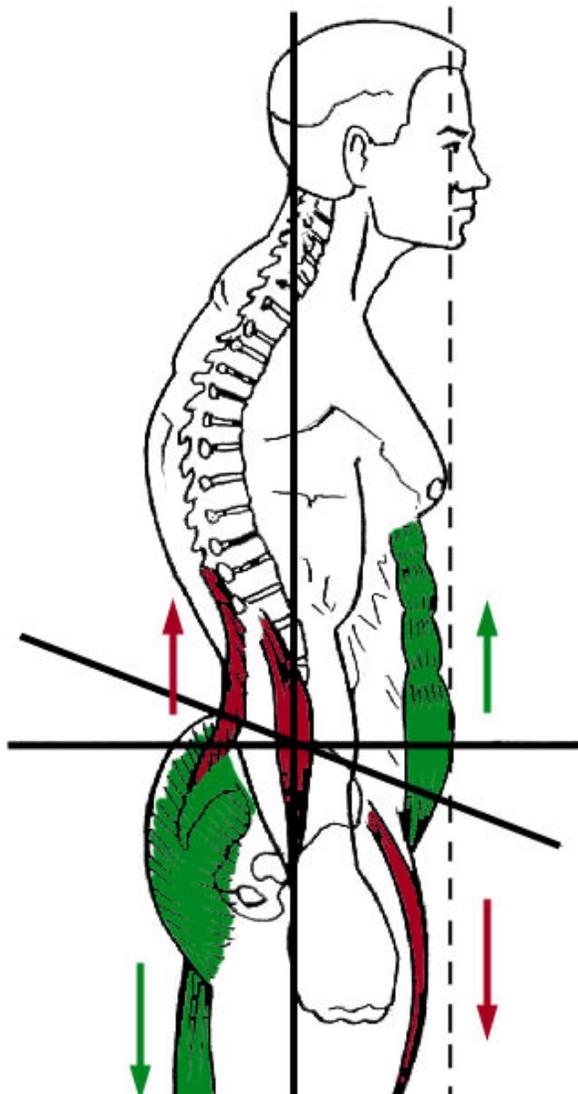
Intelligent Stretching

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Stretching is an ancient form of exercise that goes deeper into evolution than man himself. If you wonder what I mean, watch any cat or dog, and you will often see them stretch upon rising after a rest. Birds can often be seen stretching their wing muscles as well. Most ancient martial arts and athlete conditioning systems incorporate stretching as an integral part of athlete development. Stretching has also been part of healing practices for thousands of years. But have we learned anything recently that will improve your results with stretching? Yes, we have. In this article, I will share the following tips for getting maximum results in minimum time with stretching:

- Learn about tonic, phasic and mixed muscle types and which ones should be stretched first.
- Discover when the best time to stretch is depending on the desired outcome.
- Learn two basic approaches to lengthening the muscle-tendon unit and which is best for your situation.
- Realize that as your body or your activities change, so too must your stretching routine if you want the best results!



Not All Muscles Are the Same

You are likely to have heard the term “postural muscles” before. This term refers to those muscles ideally suited to hold you up against gravity. The term “tonic muscles” is often used synonymously with the term “postural muscles,” yet in actuality, the tonic muscles and postural muscles are somewhat different. Let me explain: While postural muscles do hold you up against gravity, postural muscles are, for the most part, the muscles on the back of your body, called extensor muscles. Gravity is always trying to push you into the fetal position, so the postural muscles primarily resist motion in that direction.

Tonic muscles, on the other hand, are muscles that react to faulty loading by shortening and tightening and tend to become easily facilitated, meaning they become workaholics very easily and suffer the typical soft tissue stress that goes with doing more than a muscle should! Now, before we go on, let me clarify the term “faulty loading.” Faulty loading as it is used in this article means any over-use, under-use, abuse (such as trauma) or disuse (such as not getting adequate exercise!).

Tonic muscles also have a lower threshold of stimulation than other skeletal muscles because their composition is at least 51% slow twitch muscle fiber. Slow twitch muscle fibers have a greater capacity for prolonged work, such as aerobic activity or holding you up against gravity. Vladimir Janda, one of the original pioneers who identified some of the tonic and phasic muscles (see phasic muscles below) also identified that these muscles tended to shorten and tighten in hospital patients exposed to prolonged bed rest, such as those in a coma who need to be regularly stretched out by physical therapists to avoid problems with joints and connective tissues later on.

Phasic muscles, on the other hand, contain at least 51% fast twitch muscle (explosive) and react to faulty loading by lengthening and weakening (relative to their functional antagonists or opposing muscles). This can be quite a problem

since the same event that causes a tonic muscle to shorten and tighten can, and usually does, result in lengthening and relative weakening of any opposing phasic muscle(s). This results in a condition referred to as a muscle imbalance among those in the field of sports conditioning and musculoskeletal rehabilitation (See Figure 1 at right).

Mixed muscles are a third classification, identified by the fact that they don't show any preference to length or strength changes in response to faulty loading, not including typical fatigue of course. For example, your deepest abdominal muscle, the transverse abdominis (TVA), and your diaphragm are mixed muscles.

The Problem of Muscle Balance

Above, I stated that "tonic muscles" react to faulty loading by shortening and tightening, while "phasic muscles" do just the opposite. This creates quite a problem in the body because in many instances tonic and phasic muscles are directly opposed and/or opposed in their postural actions on various joints in the body. This can easily be seen in Figure 1., which shows that as the tonic hip flexor muscles (in red) shorten and tighten, the phasic abdominal and hamstring muscles are strung taunt, becoming longer. Over time, the tonic muscles actually physically, or structurally shorten, while the stretch stimulus created by a shortened tonic muscle will lead to structural lengthening of a phasic antagonist. This perpetually destabilizes joint structures throughout the entire body, being most problematic locally (the site where the imbalance began) in most cases.

With that in mind, please view Table 1 below.

Table 1

Predominantly Tonic Muscles	Predominantly Phasic Muscles
Prone to Hyperactivity	Prone to Inhibition
Function	
Posture	Movement
Susceptibility to Fatigue	
Late	Early
Reaction to Faulty Loading	
Shortening	Weakening
Shoulder Girdle - Arm	
Pectoralis Minor	Rhomboids
Levator Scapulae	Trapezius (middle)
Trapezius (upper)	Trapezius (lower)
Biceps Brachii	Triceps Brachii
Scalenes	Deep Neck Flexors
Subscapularis	Forearm Extensors
Sternocleidomastoids	Supraspinatus
Masticatory	Infraspinatus
Forearm Flexors	Serratus lateralis
	Deltoid
Trunk	
Lumbar and Cervical Erectors	Thoracic Erectors

Quadratus Lumborum	Rectus Abdominis
Pelvis – Thigh	
Hamstrings	Vastus Lateralis
Iliopsoas	Vastus Medialis
Rectus Femoris	Gluteal Muscles
Thigh Adductors	
Piriformis	
Tensor Fasciae Latae	
Lower Leg - Foot	
Gastrocnemius	Anterior Tibialis
Soleus	Peroneals
	Extensors of the toes

You will see a list of commonly recognized tonic and phasic muscles in the body. In short order, you will notice that many of the tonic muscles (such as the pectoralis minor) have phasic antagonists (such as the middle trapezius and rhomboids). With this knowledge, you can now get a good idea why general stretching rarely helps improve overall musculoskeletal performance, nor does it offer the kind of injury prevention more skillful application of stretching will. We must realize that muscles and their connective tissues act like springs by creating tension and force on a joint complex even at rest. If a muscle becomes lengthened or shortened relative to its antagonist, it is much like having some tight strings and some loose strings on your guitar or piano - it doesn't play good music!

If you show up to a tennis match and just stretch all your muscles, will you be balancing the system for improved joint stability, injury prevention and improved performance? NO! No more than if you loosen or tighten all the strings of an out of tune string instrument.

To stretch most effectively requires that you test each of the tonic muscles to see which of them are shortened and in need of balancing. This will automatically improve the function and balance of a phasic antagonist. You can balance your body by simply trying any and all the stretches you know and sticking to the following premise: "If it's not tight, DON'T STRETCH IT!" Failing to follow this simple guideline will only result in one of two responses: If you complete the typical general stretching routine, you will simply be loose and out of balance, while not stretching an out of balance body and simply exercising just results in a progressively tighter, potentially brittle out-of-balance body. Neither is optimal for your health or performance!

When Should I Stretch?

Immediately prior to your exercise warm-up, I suggest you stretch only the tight muscles identified by testing or those that lack needed flexibility relative to your chosen activity. Always test your response to such corrective stretching in a non-competitive environment for best results because stretching tight muscles can change your sense of balance and where your limbs are in space (proprioception). This is not an experience you want to have for the first time just prior to competition!

If you lack normal or optimal flexibility in any muscle group and wish to balance the body for injury prevention and/or pain reduction, I suggest stretching at night as close to bedtime as possible. This is because your body does most of its tissue healing at night, and if you lengthen tight muscles before bed, they will heal in a lengthened state, progressively balancing your body. If you want to stretch to improve energy levels (Chi flow), you can get a favorable response whenever you are tired. I prefer stretching to improve Chi flow first thing in the morning because it helps me feel better in my body and improves mental clarity.

Regardless of when you stretch, you will find that your results are best if your body is warm. About the temperature that causes a light sweat is just right. Remember that tight muscles are like crying babies; if you stretch too hard, it's like jostling a crying baby, which makes it cry louder. Yet if you ease into the stretch, it is like gently rocking the baby, and the muscle will relax and let go favorably.

Never rush a stretching session. If you are in a hurry, simply start with the tightest or most problematic muscles and do as many of them as you can very well. Doing a poor job of a bunch of them will not give as good a result.

What Is the Best Method of Stretching My Muscles?

If you are preparing for an athletic endeavor, I suggest a form of stretching called “contract-relax.” This method requires that you place the muscle to be stretched under tension and then activate it against isometric (immovable) resistance for five seconds, followed immediately by five seconds of relaxed lengthening. You will find that breathing really influences your stretching; a general rule of thumb is to inhale as you activate a muscle and exhale as you relax and stretch it. It is very important that, after contracting for five seconds, you immediately move into the stretch position as you relax and exhale. You have a very narrow time window during which the contraction will relax the muscle, facilitating the stretch. Each muscle you stretch with this method should be exposed to between three and five contract-relax stretch cycles, and you may need to do exceptionally tight muscles two to three times through such a cycle.

If your muscles are chronically shortened and you need to improve joint range of motion beyond what can be done with contract-relax stretching, or if you have shortened connective tissues, prolonged static stretching is more effective. Again, it is best done at night, warm with a light sweat, in a steam bath or even in a hot tub (be careful of the time in the hot tub though!). I recommend holding each stretch for a minute or more. Again, don't be over-zealous with your stretching efforts or your body will react against the stretch to protect you from injury. You can stretch each of the shortened muscles or muscle groups as many as three or more times. When you no longer experience a lengthening effect, you have gained all you will gain in that session and should not force it or you can injure connective tissues.

How Long Do I Stick With My Stretches?

As your body begins to balance with corrective stretching, you will eventually find you don't feel a sense of tightness in the muscle any more. At that point, you should not stretch it any further unless you have a specific flexibility requirement for your chosen activity. For example, many golfers need to improve their range of motion beyond the point that they naturally reach end range even though their body is balanced. In such a case, corrective stretching methods should be continually applied until your flexibility goals are reached unless that amount of flexibility is beyond your congenital make-up (natural ability).

If your work or sports activities change, so too must your stretching routine if you want the best results! I suggest you repeat all 20 stretch tests in my book, “How To Eat, Move and Be Healthy!” every couple of weeks, remembering to adjust your stretching routine to include only those muscles in which you lack flexibility. This will keep your body balanced and minimize unnecessary pain in joints and tissues as well.

While the topic of stretching can become very complex, particularly in rehabilitative situations, I'm sure that if you apply the tips I've shared here and read the suggested resources, you will be rewarded with improved posture, increased energy levels, reduced pain and enhanced performance. Stretching can be as uplifting as a cup of coffee or your favorite tea, but with none of the negative side effects.

If you feel you need specific help with an evaluation, you are welcome to visit my web page and find a certified CHEK Practitioner, Golf Biomechanic or CHEK Exercise Coach near you. Many of them are also CHEK Nutrition and Lifestyle Coaches and can assist you in implementing the foundation health principles that Dr. Mercola and I both heavily promote.

Enjoy balance!

Overall Chek Positioning Statement on Stretching:

If your piano or guitar were out of tune, would you stretch all the strings? If your bicycle has a wheel that was out of round, would you loosen all the spokes? Not if you knew what you were doing!

Consider that you will be hard pressed to find ANYONE in the gym without significant muscle imbalances in their body; that means that they too are like the crooked bicycle wheel or the out-of-tune string instrument. If you simply apply general stretching methods (as is so common in the exercise industry today), the best you can expect is to have a looser, yet still out-of-balance client!

Intelligent stretching must be more scientific. A knowledge of tonic and phasic muscle systems and the needs imposed by each individual's work, recreation or sporting environment, as well as their current and past history of injury, and a current work-up on their joint range of motion will lead to optimal results. Afterall, that is what people pay us for!

References:

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2. Lewit, Karel, *Manipulative Therapy in Rehabilitation of the Locomotor System*, 3rd Edition, Great Britain, Butterworth-Heinemann, Reed Educational and Professional Publishing Ltd, 1999

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