

Strength vs. Length

By Vincent A. Cambrea

A common question I get from both clients and students is: what do you think about stretching? Generally, my response is, “stretching *what*”, which generates the common answer, “tight muscles”. My response to that answer is, “tight *how*?”, usually followed up with a confused “*huh*?!”

Here is the problem: the word tight doesn’t give us the information we need to make a decision on whether or not stretching is appropriate.

Tight muscles are often thought of as shortened but this is not always the case. Short and tight are not synonymous. Agreed, when a muscle is short it might be tight, however, when a muscle is long it might also be felt as tight to both the massage therapist who is palpating the tissue and the client who is receiving the work.

Stretching is beneficial when applied to shortened muscles (whose actin and myosin fibers are held closer together), because it aids in increasing the resting length, helping to bring about balance at a particular joint.

If this same approach is taken with a lengthened muscles (whose actin and myosin fibers are farther away from each other), it will only encourage the imbalance. In the case of a lengthened muscle, appropriate exercise to increase strength is generally the best way to improve balance. To better understand how this balance effects the body’s muscular structures and our decision to stretch them or not, let’s take a look at a commonly treated example.

Strained eyesight, poor hearing, improper ergonomics, and depression are all forces that commonly displace the head forward from the body’s centerline of gravity. This is termed Forward Head Posture (FHP). When

this happens in the body, the entire structure must compensate. It has been stated that for every *inch* the head moves forward, its load on the neck extensors increases by the weight of the head. In other words, a head weighing 12 pounds that has traveled forward 3 inches now weighs 36 pounds relative to the neck extensors. The body must compromise itself to deal with this increased load.

My guess is, you have seen a client with FHP more than once. This posture is easily observed from the frontal plane and can be assessed as soon as they walk in the door. You want to see their *natural* posture, so don't let on to what you are looking for. FHP causes an increase in length to certain muscles (i.e.: the Long Cervical Extensors and the Deep Cervical Flexors). These muscles will have a decrease in neural drive thereby decreasing their neurological strength, otherwise known as reciprocal inhibition. As the head travels forward, the relative load of the head on the already lengthened muscles increases. Now we have a situation of both strength loss and increased workload, not a good situation. The above muscles will benefit from a decrease in length and will respond well to isometric exercises to increase their postural strength. Pain is most commonly felt in this group of lengthened muscles.

Just a few of the muscles shortened with FHP include the Upper Trapezius, Sub occipitals and Levator Scapulae. These short muscles will benefit from an increase in length, making stretching and bodywork an appropriate treatment. Stretching will reciprocally inhibit these muscles thus decreasing their neural drive. This will allow for greater strength gains in the opposing, weakening muscles.

When the length of a muscle is taken into consideration rather than just its tonicity, it becomes much easier for me to answer the original

question, *what do you think about stretching.*

I think stretching goes hand and hand with strengthening to create balance around any particular joint thus increasing efficiency, stability, and over all tissue health.

When done at the appropriate time for the appropriate muscles, stretching and strengthening may be the missing link to our clients' full recoveries from chronic pain and injuries.

1. The amount of nervous system input to a muscle.