

HOW MUCH TIME WE SPEND STRETCHING IS LARGELY DETERMINED BY THE LOGISTICS OF OUR SCHEDULE AND HOW MUCH OF OUR BODY WE WANT TO STRETCH. ENGAGING IN A STRETCHING PROGRAM THAT STRETCHES THE ENTIRE BODY IS OPTIMAL.

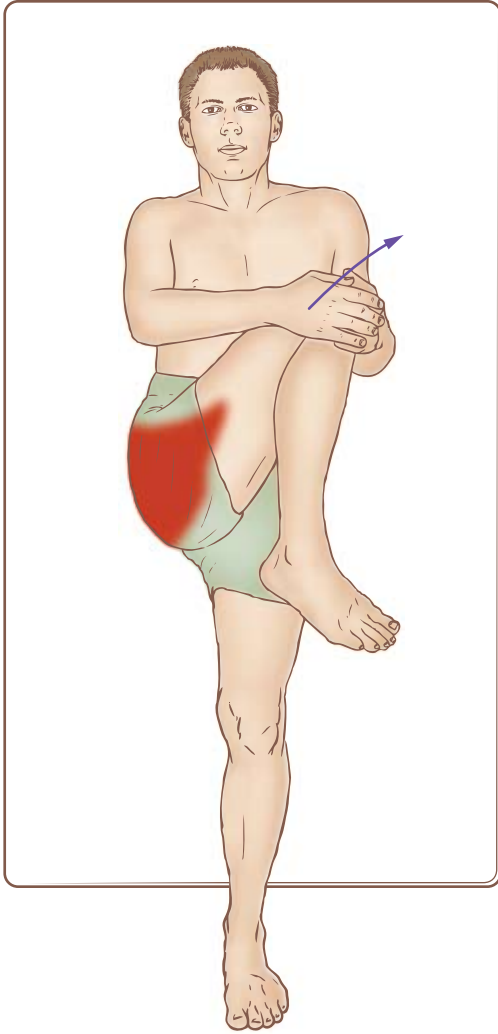


FIGURE 9 demonstrates a stretch for the gluteal region. The thigh is drawn up and across the body. Varying the exact angle of the thigh can optimally stretch different fibers of the gluteal region.

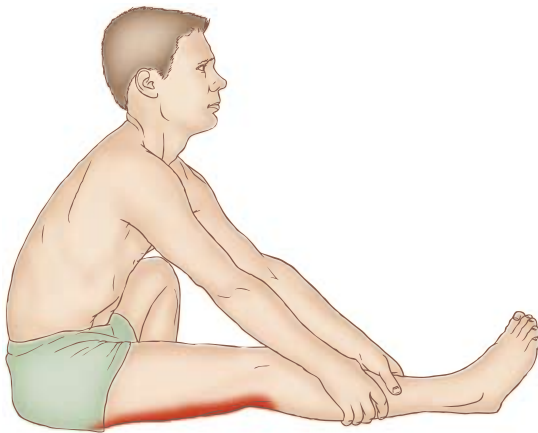


FIGURE 11 demonstrates a stretch for the hamstring group. With the knee joint fully extended, rock forward with the pelvis (the spine does not need to bend).

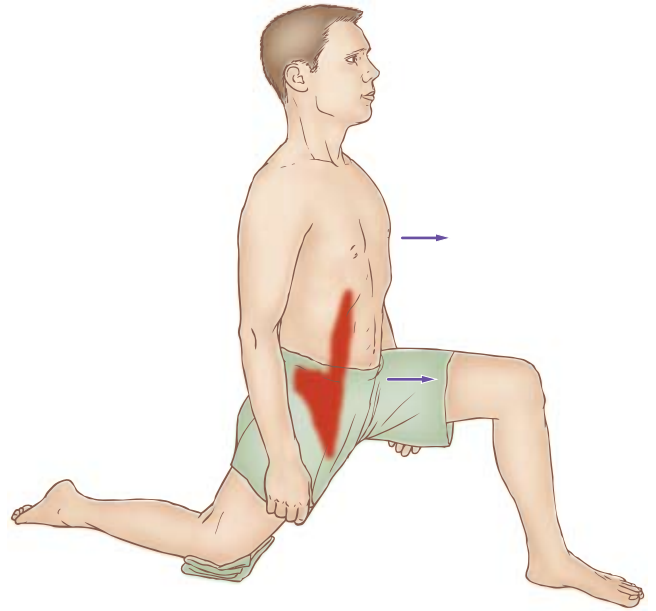


FIGURE 10 demonstrates a stretch for the hip flexor group. Note: When performing this stretch, it is important to keep the trunk vertical.

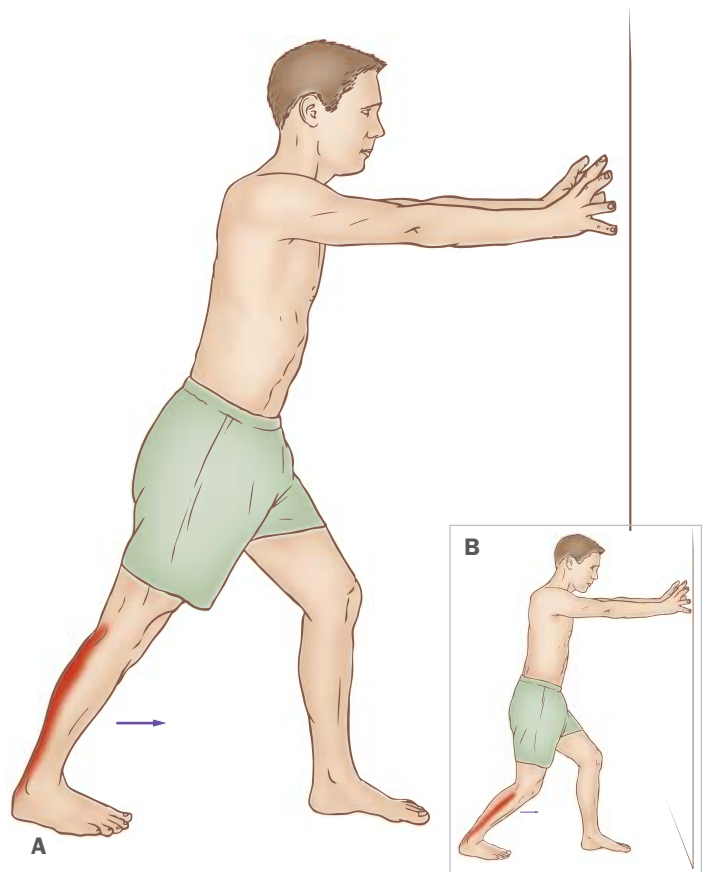


FIGURE 12 demonstrates a stretch for the plantarflexors of the posterior leg. A, for the gastrocnemius, the knee joint must be extended. B, for the soleus, the knee joint should be flexed. For both muscles, the heel must remain flat on the floor.



When stretching a muscle, bring the muscle to the point of tension where it just starts to resist the stretch. Then the muscle should be slowly stretched, just slightly longer than the point where tissue tension was reached.



adding neural inhibition to the stretch

A stretch can be enhanced by adding a neural inhibition component, whether performed statically or dynamically. Neural inhibition involves the nervous system inhibiting; in other words, relaxing a muscle so that it can be stretched more effectively. Two nervous system reflexes can be utilized for this: reciprocal inhibition reflex and the Golgi tendon organ reflex.

RECIPROCAL INHIBITION is a reflex that inhibits/relaxes the antagonist muscles when an agonist (mover) muscle is contracted. The key to using this reflex is to create a scenario in which our target muscle (the muscle to be stretched) is the antagonist of a joint motion. It's quite simple to do. We contract our musculature to actively move our body into the position of stretch of the target muscle. For example, if our target muscles are the hip flexors, we simply move the thigh into extension at the hip joint.

In effect, any dynamic stretch adds the component of reciprocal inhibition if we actively move the body part into the position of the stretch instead of passively moving it there. For example, when stretching the posterior shoulder region as seen in Figure 2, instead of using the left hand to bring the right upper extremity into the position of stretch, we contract the anterior shoulder musculature of the right upper extremity to actively move it into the position of stretch. In addition to the mechanical component of stretching the posterior soft tissues, the posterior muscles will be reciprocally inhibited so they can then be stretched more effectively.

Once the position of stretch is reached, we then further stretch the target musculature; this is done passively by using the left hand to stretch the right upper extremity. Stretches that utilize reciprocal inhibition are called ag-

onist contract (AC) stretches. Aaron Mattes' technique, active isolated stretching, is a form of AC stretching. AC stretches are usually performed dynamically; therefore the position of stretch is only held for a couple of seconds and eight to 10 repetitions are performed.

THE GOLGI TENDON ORGAN REFLEX inhibits a muscle from contracting if that muscle is first contracted with moderate or greater force. To utilize this reflex when stretching, we need to first actively contract our target musculature. This is usually done isometrically against the resistance of our own body. If the right-sided posterior neck musculature in Figure 6 are our target muscles, instead of simply stretching the neck with the left hand, we would contract the right-sided posterior neck muscles against resistance provided by our left hand. Then we would use our left hand to bring the neck into a position of greater stretch (flexion and left lateral flexion).

Stretches that utilize the Golgi tendon organ reflex are called *contract relax* (CR) stretches. They are also known as post-isometric relaxation (PIR) and proprioceptive neuromuscular facilitation (PNF) stretches (Note: AC stretching is also sometimes known as PNF stretching). The isometric contraction of a CR stretch is held between five and 10 seconds, and three to four repetitions are usually performed.

Any stretch can have a neural inhibition component of CR or AC stretching added to it. Logistically though, it is sometimes easier to convert a stretch into one or the other depending upon the mechanics of the situation. Because both CR and AC stretching require active contraction of musculature, they have the added benefit of strengthening musculature and improving neural pathways from the central nervous system.



For a 10–15 minute stretching routine, look to figures 1–12 on pages 33–34 and 36.



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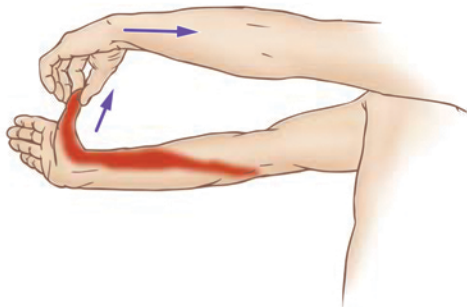


FIGURE 5 demonstrates a stretch of the flexors and adductors of the thumb.

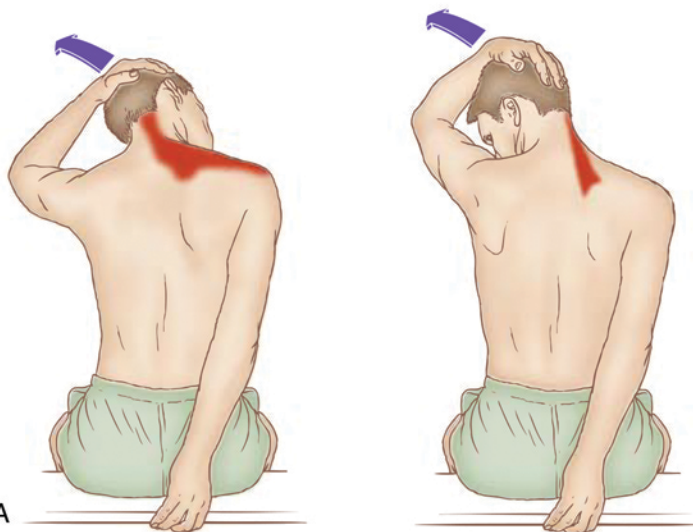


FIGURE 6 demonstrates two stretches for the extensor muscles of the posterior neck. Both stretches involve flexing and laterally flexing the neck and head. In A, ipsilateral rotation is added; in B, contralateral rotation is added.

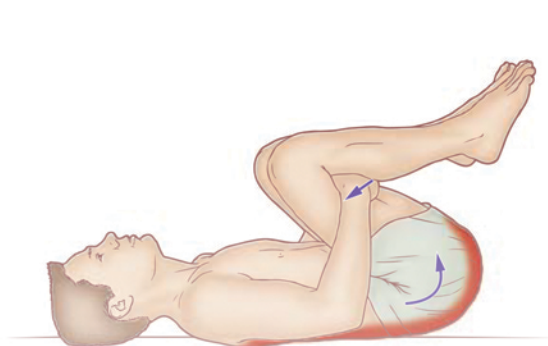


FIGURE 7 demonstrates a stretch for the extensor muscles of the posterior trunk. Both knees are drawn into the chest. To increase the stretch for the extensor muscles on one side, deviating the thighs toward the opposite side can be added to the stretch.



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