



Deep Neck Flexors

The deep neck flexors are a group of muscles that are located just in front of the cervical spine. These muscles function together with the deep cervical extensors, the cervical multifidus, to stabilize the neck and control the cervical curve in upright postures and during movement of the arms. When healthy, these muscles anticipate cervical or arm motion and contract in preparation preventing the slipping of one vertebra on another.

Deep Neck Flexors - Dysfunction

Scientific evidence indicates that neck pain (regardless of the mechanism of injury) results in a loss or, a decrease in the activity and the anticipatory contraction of the deep neck flexors. Further evidence suggests that if this muscle dysfunction is not corrected, it will persist even after an individual's pain has subsided, increasing the incidence of re-injury and chronicity.

Rehabilitation Principles

Retraining the deep stabilizing muscles of the neck is different than most exercises you have been used to in the past. The first step is to learn to isolate the muscle. The second step is to learn to train and strengthen the DNF's in conjunction with the other muscles responsible for stabilizing the cervical vertebrae. The final step is to coordinate this co-contraction with the larger superficial muscle of the neck and shoulder regions during functional activities.

Step 1: Isolation of the Deep Neck Flexors

Technique:

- Lie on your back with your neck and head in a neutral posture (your ear should be in line with the tip of your shoulder). It is critical that you are comfortable and without discomfort in this position so adjust the height of your head with layers of a folded towel.
- Focus on your head. Think of it as a wheel with the axis through your ears. Try to spin the wheel around the axis in a very slow, controlled fashion.
- When you do this movement you should not feel your head lifting up off of or pushing back into the surface it is resting on. Your chin will come slightly closer to your Adam's apple and, the base of your skull will move away from your shoulders making your neck longer.

Notes:

- It is important that when you do this movement that it is slow, controlled and minimal in its exertion (i.e. you should only move your chin several millimetres). It might help to focus on producing the movement from deep inside your throat, as well as physically looking down with your eyes as you attempt to spin your head.
- You should not feel any pulling in the back of your head, neck, shoulders or upper back while performing the motion.

Notes continued:

- Try to prevent your neck feeling rigid and coordinate the motion with your breath, (i.e. do the movement during a slow controlled breath out and then hold for a couple of breaths before relaxing).
- In healthy individuals the movement should be produced primarily by the deep neck flexor group of muscles however, in persons with persisting neck symptoms it is likely that the more superficial muscles will co-contract in an attempt to compensate for the dysfunctional deep muscles. You can increase your awareness of this confounding activation by monitoring the superficial cervical flexors with your fingers (located just above your collar bones near their midline) while you are trying to isolate the DNF's.

It is important that you take time to focus on your technique and achieve a correct contraction BEFORE moving on to any loading through the arms or legs. Watch/feel for the following substitution strategies:

- Pushing of the head back into the support surface;
- Lifting of the head up off of the support surface;
- Quick, fast, jerky contractions.

Step 2: Strengthen/Train Deep Neck Flexors

Once you can isolate the deep neck flexors, practice this isolation in many different positions i.e. sitting, standing, etc. Once you can turn the muscle on easily you can progress to the following exercises lying on your back.

- Connect to your deep neck flexors by looking down with your eyes and then by using the image of a wheel beginning to spin around its axis.
- While maintaining #1, spin the wheel only 2mm over 3 seconds and then hold for 10 seconds. Repeat 10 times (i.e. chin tilts down slightly).
- While maintaining #1, spin the wheel 4mm, then 6mm, then 8mm etc. over 3 seconds and then hold for 10 seconds. Repeat 10 times (i.e. chin tilts down progressively more).

Ensure that you are not using any of the compensatory strategies outlined above by continuing to monitor the activity in the SCM muscle (scrap like muscle that comes from under your ear to your collarbone). If you feel it “kick in” or contract then you are likely to be either doing the wrong movement or you have reached the capacity of your deep muscle system.

Step 3: Incorporate into other activities

The final step is to remember to use the deep neck flexors during regular life activities. Each time you get out of the chair, lift, bend or reach this group of deep muscles should be working at a low level. The goal is to teach the body to resume its normal stabilization strategy by activating the deep muscles BEFORE movement begins.