



## CHAPTER 5

### TENSION HEADACHE TURMOIL - TAMING TIGHT MUSCLES

#### TRIGGER POINTS IN TENSE MUSCLES

The strong pressure creeping up from your upper shoulder muscles and the back of your head is a warning that you are on the verge of a tension headache that will soon envelop both sides of your head with a tightening, gripping pain. Tension headache is the most common type

of headache, and the neck and shoulder muscles seem to be where the pain originates.<sup>1</sup> Physical and psychological stresses can produce the tightening effect in the muscles of the upper shoulder and neck, resulting in tension headaches. These tension headaches may last from 30 minutes to seven days and afflict women more than men. The more common episodic tension headache occurs for less than 15 days per year and can occur in 34% of the population. The less common, more difficult, chronic tension headache occurs more than 15 days per month, or even continuously, in two to three percent of the population.<sup>2</sup>

Tension headaches can have elements of both cervicogenic and migraine headaches. Tension and cervicogenic headaches share the same tight and tender muscles that benefit from being stretched.

If you are afflicted with a tension headache, your head, neck and upper shoulder may become very tender to touch. Trigger points are located in a taut band in these muscles that send pain to different parts of your head. Trigger points are tender spots embedded in a band of a muscle, and they are released by slowly increasing pressure on the point until it relaxes and softens.<sup>3</sup> The pressure to the point may need to be held for one or two minutes to release it. Stretching the muscle which contains the trigger points can also help to release the trigger points. However, trigger points embedded in a headache-generating muscle may stretch right along with the muscle and, therefore, not release unless direct pressure is applied. The head muscles have tender trigger points on them, and headache pain is often relieved by pressing directly on these trigger points.

The tension headache involves more than just muscle tension and tightness. Mental stress is a major trigger for both tension and migraine headaches. Techniques to relax the mind and muscles can do wonders for both tension and migraine headaches, which will be presented in chapter 6 on migraines.

A major difference between tension and migraine headaches is that nausea and vomiting may not occur with tension headaches as they

do with migraines. However, bright light and loud noises can set off both tension and migraine headaches. The tension headache has a tightening, pressure type of pain, versus the typical intense throbbing felt by the migraine sufferer. Another difference is that people with tension headaches have a more mild to moderate pain intensity and can usually persevere through their daily activities, albeit miserably, whereas the migraine headache sufferer may find it impossible to do so. Migraines also worsen with movement and tension headaches typically improve with movement. Tension headaches typically worsen as the day goes on.

Drs. David Simon and Janet Travell, who authored several trigger point manuals that are the standard in the field, found that numerous pain problems, including headaches, were discovered when muscle trigger points were injected with saline solution to map out the pain patterns. These pain patterns at times make no apparent sense. For instance, a trigger point in a muscle in the back of the shoulder blade, called the infraspinatus, sends pain into a person's wrist. Other researchers found that the trigger points in the neck, head and shoulder blade send pain to the side, top and front parts of the head.<sup>4-12</sup>

Travell and Simon's trigger point treatment method for headaches mirrors treatments with acupuncture and acupressure, since many points are identical in both treatment models. For instance, a trigger point in the upper orbit of the eye that relieves frontal headaches is the same as a point in the acupuncture/acupressure system. These trigger points not only produce pain, but they can also cause general muscle weakness, abnormal sensations, imbalance, ear ringing, dizziness, and muscle spasms which change the order that muscles fire.<sup>13-14</sup>

### HOW TO HELP WITH MUSCLE TRIGGER POINT THERAPY

"I did not know that my headaches had muscles," stated one of my headache clients, who had just relieved her headache with five minutes of pressure massage to the sternocleidomastoid muscle, which is shown in the following pages. She reported that she had been taking ibuprofen for years to alleviate her headaches, and she had intended to take one again after therapy until we identified and treated the culprit muscle.

Once your tension headache has started, a slow and sustained pressure applied for one minute to the trigger points in these headache muscles can decrease the pain they cause.<sup>15</sup> If your headache pain does not subside, change points until you find one that you notice has an effect on your headache. Do not move too fast over these muscles during massage, which most people do, because it is the deep pressure rather than the surface skin rubbing that will release the tight muscles.

Many of my headache clients are curious to see what the muscles that have created so much grief in their lives look like. The following illustrations beautifully depict some of the most common headache-producing muscles. As you look at the attachments of these muscles, imagine how each muscle can move your neck one way or the other. As you stretch and strengthen these muscles, remember that they work in combination with each other and that each muscle moves the neck in several different directions.

The one movement these headache-producing muscles all have in common is that they tilt, or extend, the neck and head backwards. Postural correction muscles in the front of the neck, shown at the end of the muscle illustration section, need to have enough strength, endurance and control to counteract this backward bending movement. You will be pleasantly surprised at how much relief you get from working these neglected head and neck muscles.

**CAUTION:** *Before trying these self-help techniques, you should make sure the headache is not the sign of a more serious problem. Consult chapter 2 before attempting these techniques. Seek the advice of a physician and acknowledge that you are responsible for any actions taken and the result of those actions. The techniques, advice and strategies contained in this chapter may not be suitable for every individual and should be abandoned if your headache increases.*

## HEADACHE-GENERATING MUSCLES

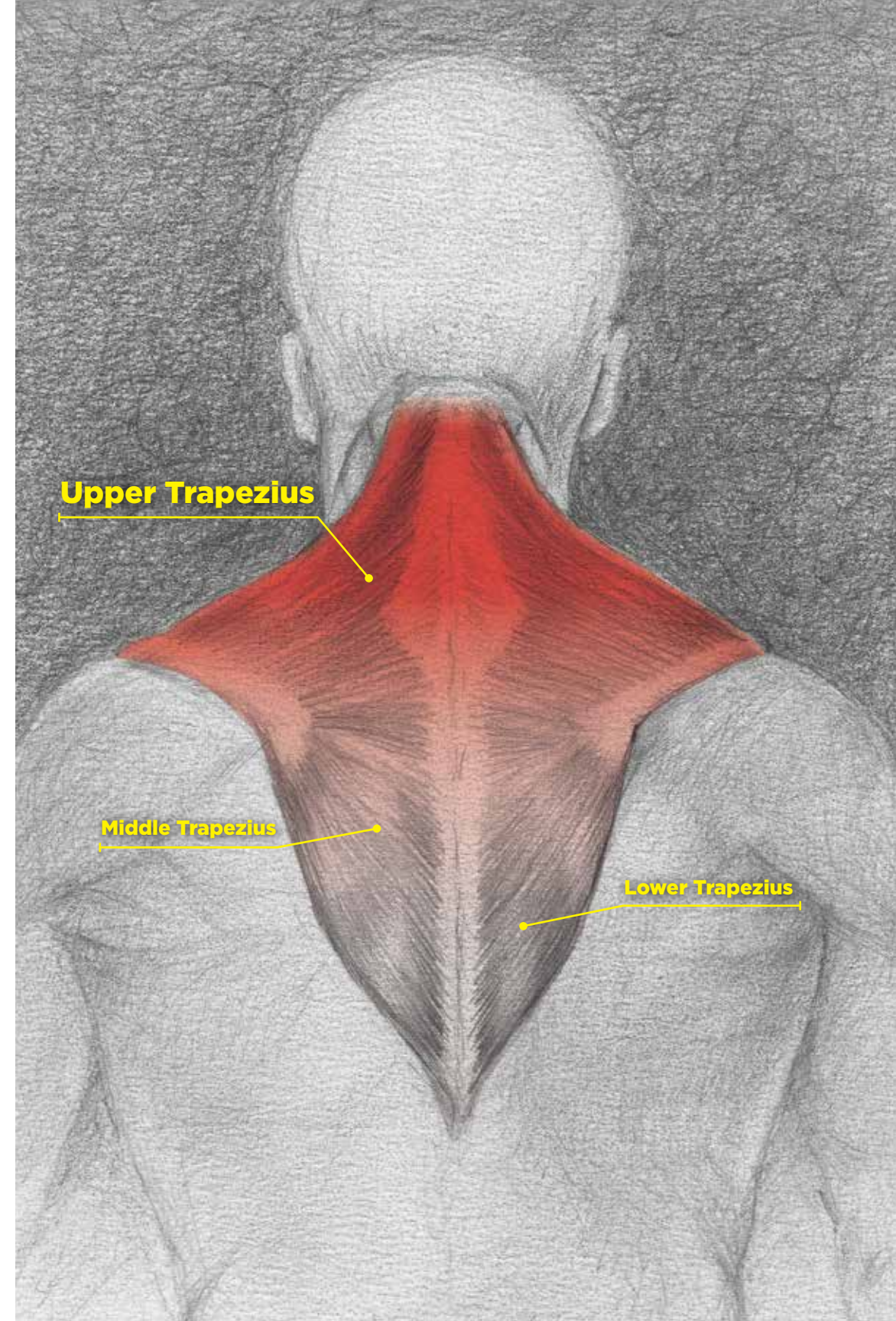
### SHOULDER GIRDLE AND NECK MUSCLE, THE UPPER TRAPEZIUS

**LOCATION:** The upper trapezius muscle is the largest headache-producing muscle and attaches to both the neck and the shoulder girdle. The upper trapezius muscle straddles the back of the skull extending down to the tip of the shoulder and is easy to feel, as it is in the top layer of the muscle groups. Researchers found this muscle was overactive in people with both tension and cervicogenic headaches.<sup>16</sup>

If you are under stress, you will likely find your upper trapezius causing your shoulders to hunch up. As you become aware of your upper trapezius muscle, you may be surprised at how often you find yourself tensing this muscle in a reaction to stress. Let your shoulders drop back down into resting position, and then check yourself every so often to make sure your shoulders are not hunching up again. If the tightness in your upper trapezius passes a certain threshold, ferocious headaches can result, which will magnify whatever stress you are already under.

Pay attention to your breathing pattern. You may be hunching your shoulders and tightening the upper trapezius muscle with every breath you take. The upper trapezius also tightens up if you raise your arm overhead by hunching your shoulders rather than using your lower arm muscles to raise your arm. Put your hands in your pockets if need be to keep the upper trapezius from tightening up.<sup>17</sup>

**SENDS PAIN TO:** A tense upper trapezius muscle projects pain to the outer part of the neck, the outer portion of the head behind the ear, with considerable pain projected to the temple area and behind the eye socket. If you have a tension headache, you can count on having tenderness in your upper trapezius muscle!



## STRETCHES FOR THE UPPER TRAPEZIUS

### Wall Stretch

A right upper trapezius is stretched by turning the neck to the right and sidebending the head to the left, slightly bending the neck forward. A downward pressure needs to be applied to counteract this muscles tendency to hunch the shoulders. Try the following steps to stretch the upper trapezius:

1. Stand up with your back against a wall.
2. Reach around behind your back with your right hand and grab onto one edge of the wall with your right hand.
3. Bend your head slightly to the left and lean away from the wall. You will feel your right upper trapezius start to stretch out.
4. Putting the right arm behind the back keeps the collar bone down, which produces a better stretch (*Figure 1*).
5. Repeat the process to the left, bending your head to the right this time.



Figure 1

### Sheet Stretch

A gentler, more relaxing way to stretch the upper trapezius muscle requires less torque to the neck.

1. Sit on a sheet to anchor it.
2. Drape the sheet around your right shoulder.
3. Pick up your left knee and wrap the sheet around your left thigh, to get a better angle for stretching (*Figure 2*).
4. Tilt your head slightly to the left as your neck rotates right, and then bring the neck forward (*Figure 3*).
5. As you put your foot onto the ground, you will feel the stretch increase on the right side of the neck and shoulder (*Figure 4*).



Figure 2



Figure 3



Figure 4



Figure 5

6. To increase the force of the stretch, move your thigh outwards to increase the tension in the sheet. Slide your leg out gently, without picking it up, so that little effort is needed (*Figure 5*). Let gravity do as much of the work as much as possible. Turn your head to the same side as the shoulder the sheet is draped around to get a good stretch of additional muscles that may be contributing to your headache, not just the upper trapezius.

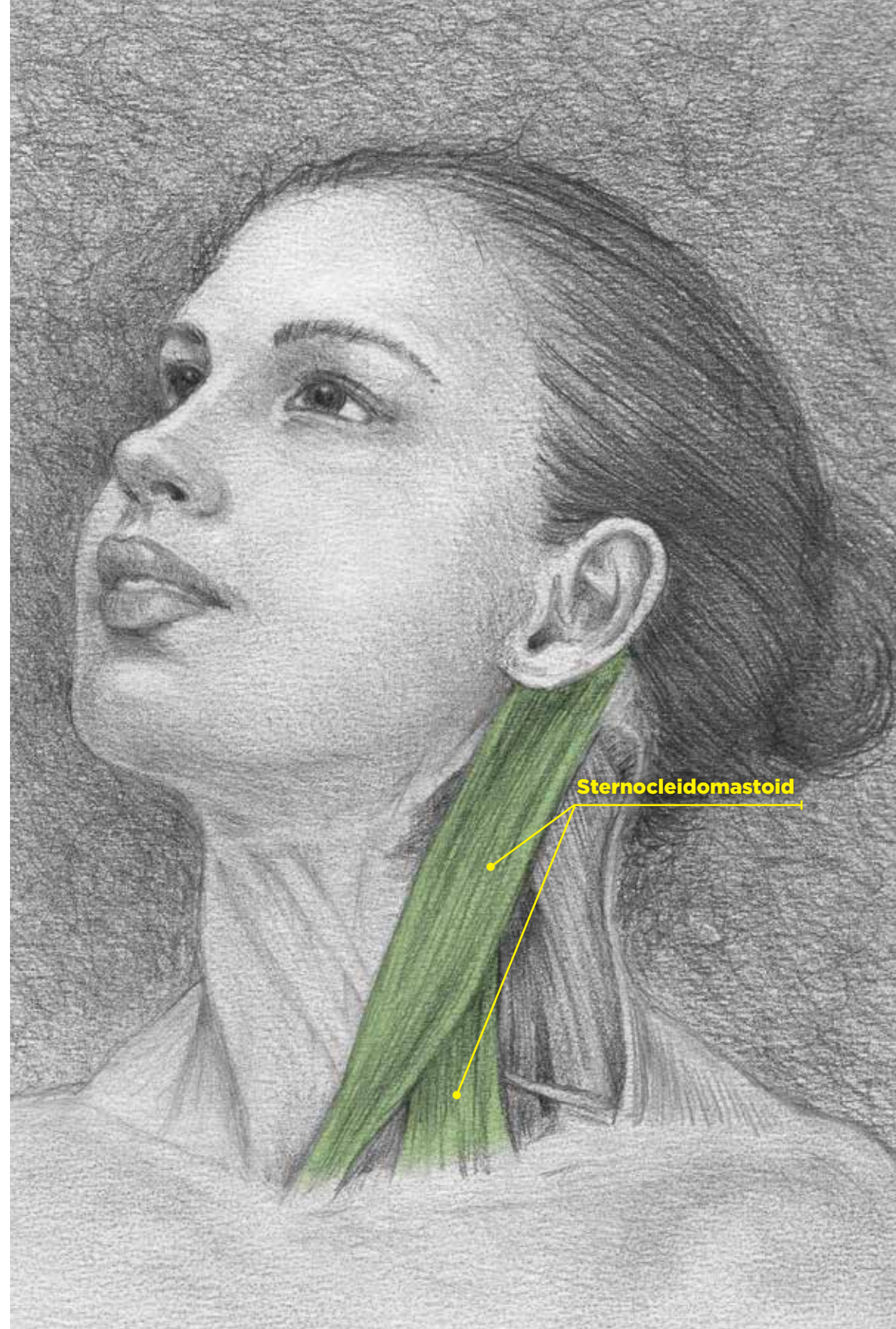
Many people find this technique very relaxing, as if someone is massaging the tight upper shoulder muscles. Hold this stretch 30 to 120 seconds. Stop if any pain radiates into the arm. Relief of your neck and headache pain should occur if this stretch is right for you.

## COLLARBONE TO THE BACK OF THE HEAD MUSCLE, THE STERNOCLEIDOMASTOID

**LOCATION:** The sternocleidomastoid is a major headache producer that must never be ignored by anyone who suffers from headaches. Treating this muscle alone can solve many people's headache troubles. It is a two-part muscle that starts at the breastbone and collarbone and merges along the neck attaching to the skull behind the ear. The sternocleidomastoid is in an outer layer of muscles, though more towards the side of the neck compared to the upper trapezius which is behind the neck. This muscle is very much involved with the poor posture condition so common in many people with headaches. When the sternocleidomastoid muscles are tight, they tilt the head upwards and force it forward. Poor posture cannot be corrected without stretching this muscle and strengthening the opposing muscles in the front of the neck.

**SENDS PAIN TO:** Travell and Simon's book shows how the sternocleidomastoid muscle sends pain to the back part of the head, behind the ear, in the eye socket and above and behind the socket and the frontal part of both sides of the head.<sup>18</sup> Pressure massage to the sternocleidomastoid muscle should be performed on the side of the neck, behind and under the ear. Avoid massaging the area in the front of the neck, where the carotid artery passes through! Even if you have normal neck motion, this muscle may still be extremely tight and tender. Keep the pressure on the muscle for one to two minutes. Common mistakes people make when massaging this muscle is that they go too rapidly and not deep enough to really get the relief that releasing this muscle can provide. Sustained, circular pressure to a smaller area, not broad, sweeping strokes, produces the best results. As your persistent massage softens the sternocleidomastoid muscle, your headache should soften as well.

Tension of the sternocleidomastoid muscle is a surprising cause of dizziness, imbalance and blurry vision, in addition to headaches.<sup>19</sup> Many of my clients are astonished when their sensation of dizziness



melts away as pressure is applied to the sternocleidomastoid muscle. Since there are many causes for dizziness, a personal physician needs to be involved to determine the cause. Dizziness is often caused by a mixture of ear, eye and muscle interaction, rather than by just one problem.

An even more astonishing result is when people have their blurry or foggy vision suddenly clear when pressure to the sternocleidomastoid muscle along the side of the neck is maintained for a minute or two. People who can get the rapid vision improvement are often those who also have the symptoms of headaches and dizziness, not those where structural damage to the eye is responsible for the vision loss. Ringing in the ears also occasionally decreases with pressure to this muscle.

**STRETCH:** While the sternocleidomastoid muscle moves the neck in different directions, we need to look at the turning component of this muscle. A right sternocleidomastoid muscle turns the head left and therefore can be stretched by turning the head to the right, and vice versa. If you can reach your left hand around the back of your neck, you can massage tight neck muscles as you turn your neck to the right (*Figure 6*). If your hand does not reach that far, you can use your left hand to turn the neck right by pressing the left side of the head but avoid excessive jaw pressure (*Figure 7*). Consider using a ball or other object to help massage out the muscle knots (*Figure 8*). Massage to a left sternocleidomastoid not only can reduce left-sided headaches, but the relief can cross over to the right side of the head. You can also place your elbow onto a counter, and lean into the sternocleidomastoid muscle for sustained pressure.

If both sternocleidomastoid muscles are tight and tender, I have noticed that as one side gets looser, the other side may get stiffer, which has also been noted by others.<sup>20</sup> In this case it is best to do a turning stretch in one direction for 10 seconds, followed by the same turning stretch for 10 seconds in the opposite direction, which will keep both sides flexible (*Figure 9*). Other neck turning muscles are being stretched along with the sternocleidomastoid muscles.



*Figure 6*  
*Turning right with slight neck tilt downwards.*



*Figure 7*



*Figure 8*  
*Massage tight left neck muscles to help right neck turning.*



*Figure 9*

The sternocleidomastoid becomes tight and tender in the forward head position.<sup>21</sup> Both left and right sternocleidomastoid muscles can be stretched at the same time by doing a chin tuck exercise (*Figures 10 and 11*).



Figure 10



Figure 11

The “tuck and turn” exercise with the theraband further stretches the sternocleidomastoid, and other neck muscles, by rotating the neck while the neck is pushed back into the theraband (*Figure 12*). If it is difficult to stretch your arms apart and away from the body, do the tuck and turn exercise with the arms closer to the chest. The tuck and turn exercise is easier to do while lying down.



Figure 12

*Make sure that you keep your chin tucked and don't let the band pull your head forward.*

Be careful not to hunch the shoulders while doing the theraband exercise. Abnormal breathing patterns can also tighten the sternocleidomastoid which may cause the collarbone to rise during inhalation. If a person has a limp, or has one leg shorter than the other, this muscle can become tight until the lower body condition is corrected.<sup>22</sup>

*Every massage or stretch technique is not appropriate for everyone. Some exercises will help your headache more than others. These activities may be harmful if done incorrectly, so please use caution and work with your licensed healthcare provider before attempting.*

## UNDER THE HEAD MUSCLES, THE SUBOCCIPITALS

**LOCATION:** These major headache-producing muscles attach to the back of the head and the upper two neck vertebrae and are in the deepest layer of neck muscles, making them harder to reach for massage. The suboccipital muscles help the neck to turn right, left and back for looking upwards. Finding the proper balance between the suboccipitals that tilt the head up and forward and the muscles in the front of the neck that keep the head level is key to maintaining good posture and keeping headaches under control.<sup>23-24</sup>

**SENDS PAIN TO:** Suboccipital muscles refer pain from the back of the head in a band to the eye socket area.

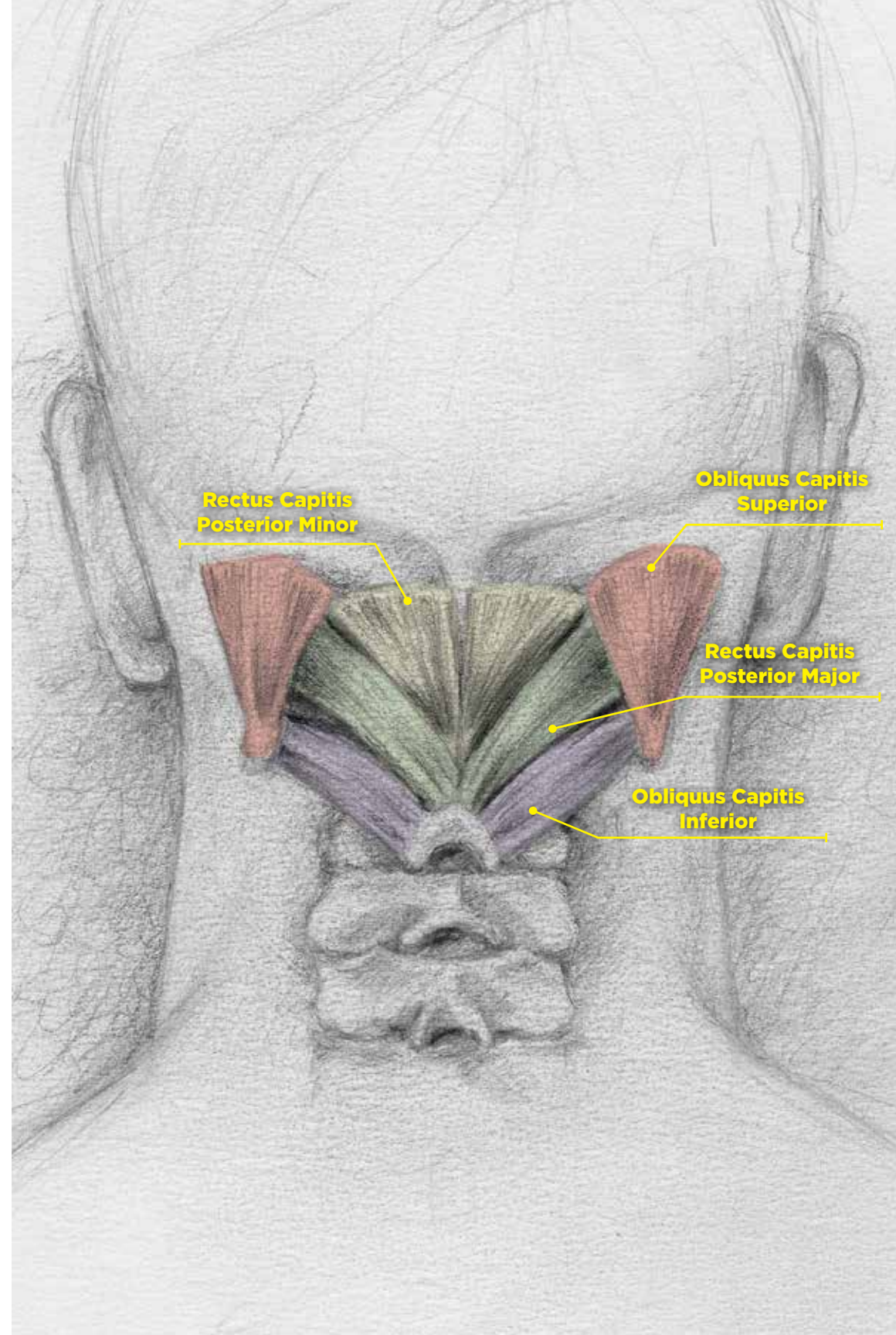
**STRETCH:** Do a chin tuck, and feel the suboccipital muscles pull in the back of your neck (*Figure 13,14*). Look down with your eyes and you will feel the pull on these muscles. For additional stretch, turn the neck right and left without letting up on the chin tuck. Do not sidebend the neck, since the suboccipital muscles do not have much to do with that motion, and you want to keep that imaginary axis of rotation straight through the neck.



Figure 13



Figure 14



## SPINE TO THE HEAD MUSCLE, THE SEMISPINALIS CAPITIS

**LOCATION:** This muscle is in a middle layer of neck muscles and progresses upwards from the shoulder blade area to attach to the back of the head. The upper part of the muscle where it attaches to the back of the head is the area of most concern for headache sufferers. A nerve called the greater occipital nerve innervates this muscle, and when it is pinched, it can cause cervicogenic, tension or migraine headache pain.

**SENDS PAIN TO:** The semispinalis capitis muscle refers pain in a band from the back of the head to the temple area up to the frontal area just above the eye.

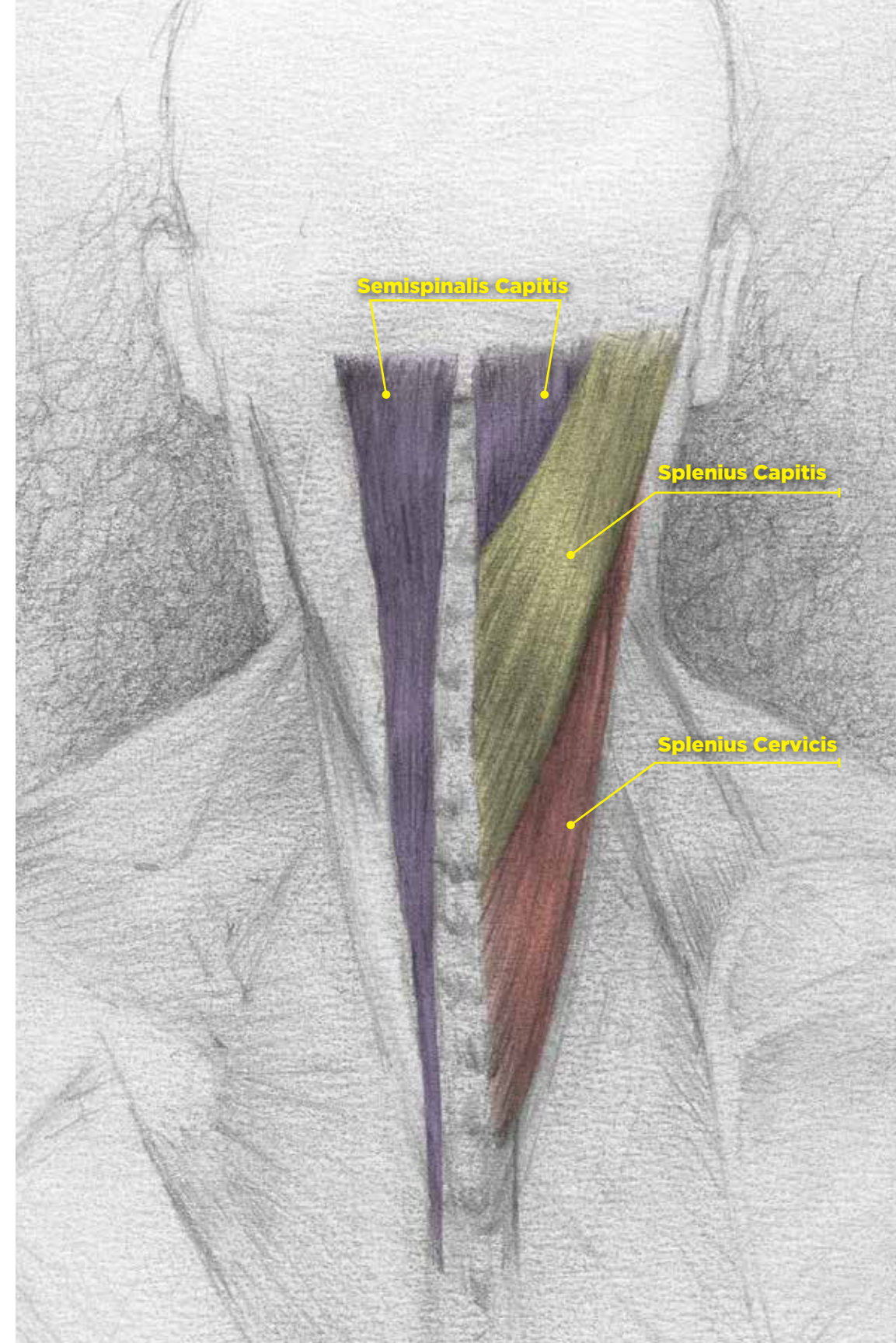
**STRETCH:** Do a chin tuck to counteract the backward bending action of the muscle and then tilt or sidebend your head left to stretch a tight right semispinalis capitis.

## FLAT MUSCLES TO THE BACK OF THE NECK AND HEAD, THE SPLENIUS CERVICIS AND SPLENIUS CAPITIS

**LOCATION:** These muscles underlie the upper trapezius. The splenius capitis starts on the neck and attaches to the back of the head. The splenius cervicis starts slightly lower and also attaches to the back of the head.

**SENDS PAIN TO:** The splenius capitis refers pain from the back to the top of the head, according to Simon and Travell, and the cervicis sends pain along the side of the head to the eye socket area.

**STRETCH:** Do a chin tuck and/or turn. Tilt your neck to the left to stretch muscles on the right side of your neck.

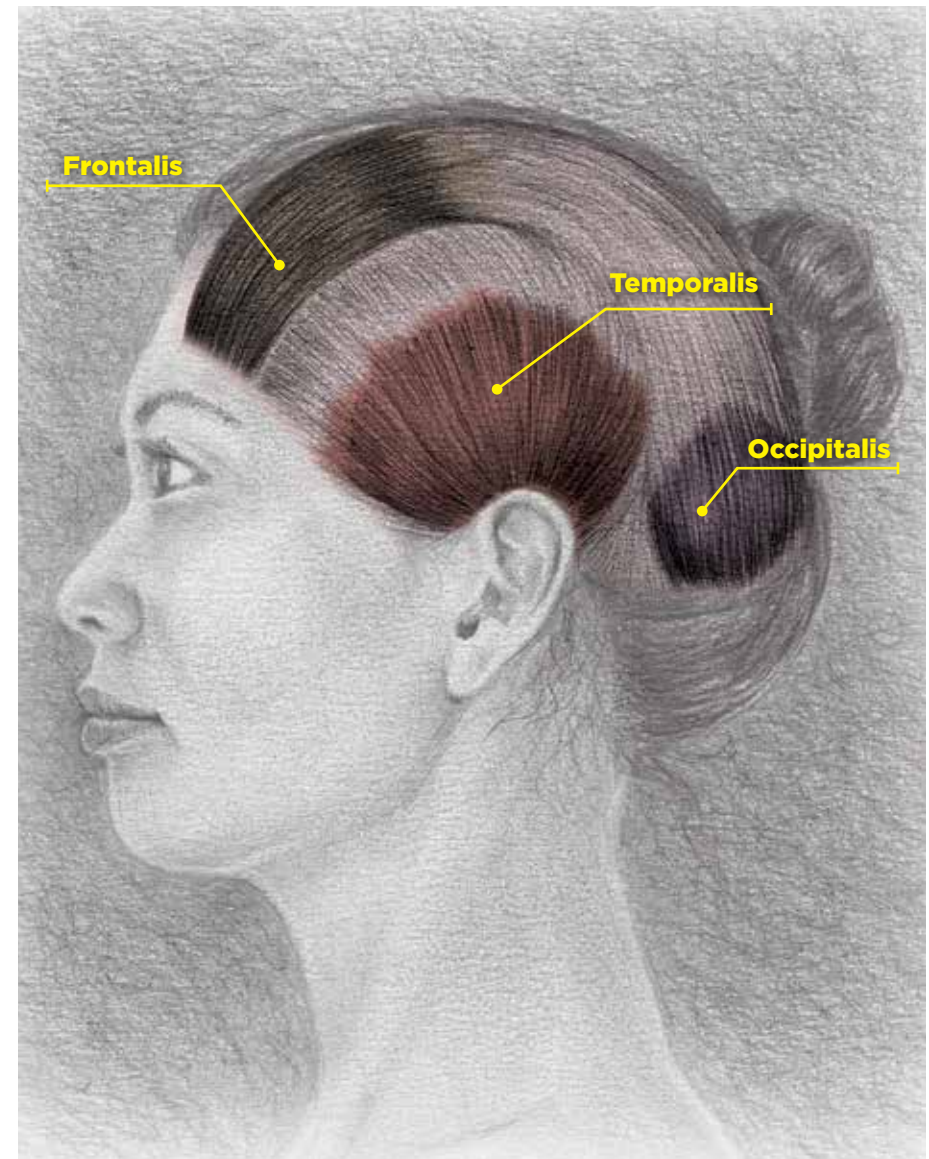
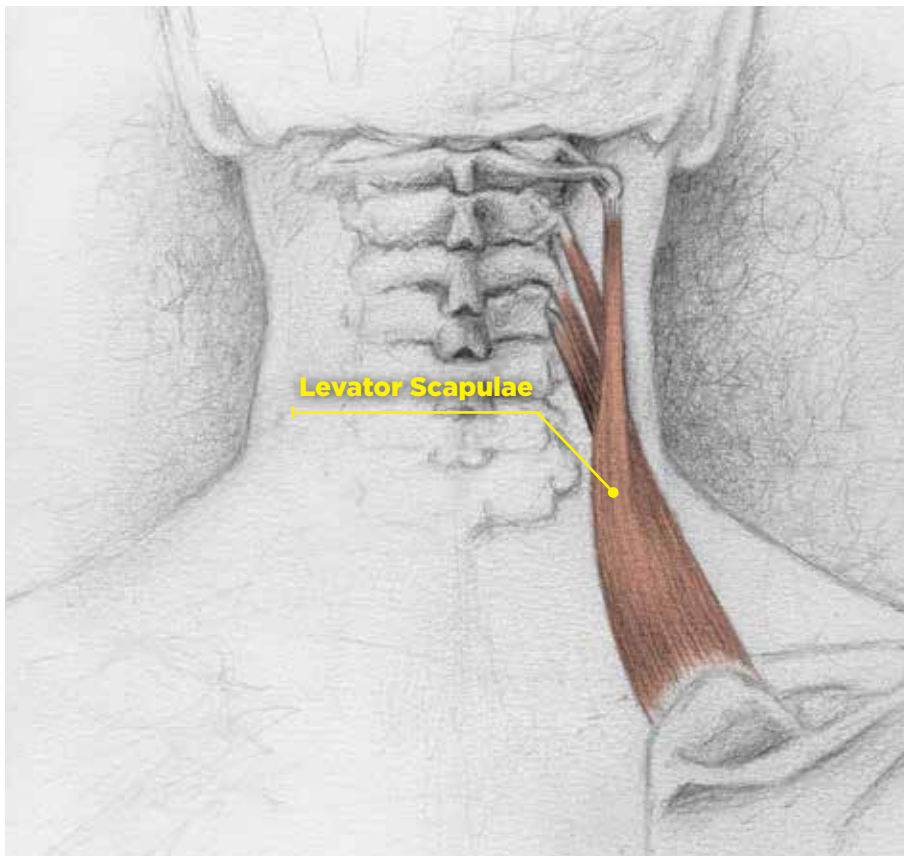


## SHOULDER BLADE TO THE NECK MUSCLE, THE LEVATOR SCAPULAE

**LOCATION:** This muscle starts at the inner border of the upper shoulder blade and travels upwards to attach to the outer neck vertebrae.

**SENDS PAIN TO:** Sources are divided as to whether this muscle is a headache generator, but some researchers contend that based on the levator scapulae's attachment it likely is a player in the headache condition.<sup>25-27</sup> This muscle certainly is responsible for much neck and shoulder blade pain, and limited neck motion.

**STRETCH:** Do a chin tuck, turn and sidebend the neck to the left to stretch a tight right levator scapulae muscle.



## SIDE, BACK AND FRONT OF THE HEAD MUSCLES, THE TEMPORALIS, OCCIPITALIS AND FRONTALIS

The temporalis muscle can clench the jaw tightly and become overstrained. Open the jaw gently and hold it open for 30-60 seconds which will stretch the temporalis and relieve your headache. The temporalis muscle even has trigger points that send pain into the teeth!

## LONG MUSCLES OF THE HEAD AND NECK, THE LONGUS CAPITIS AND COLLI

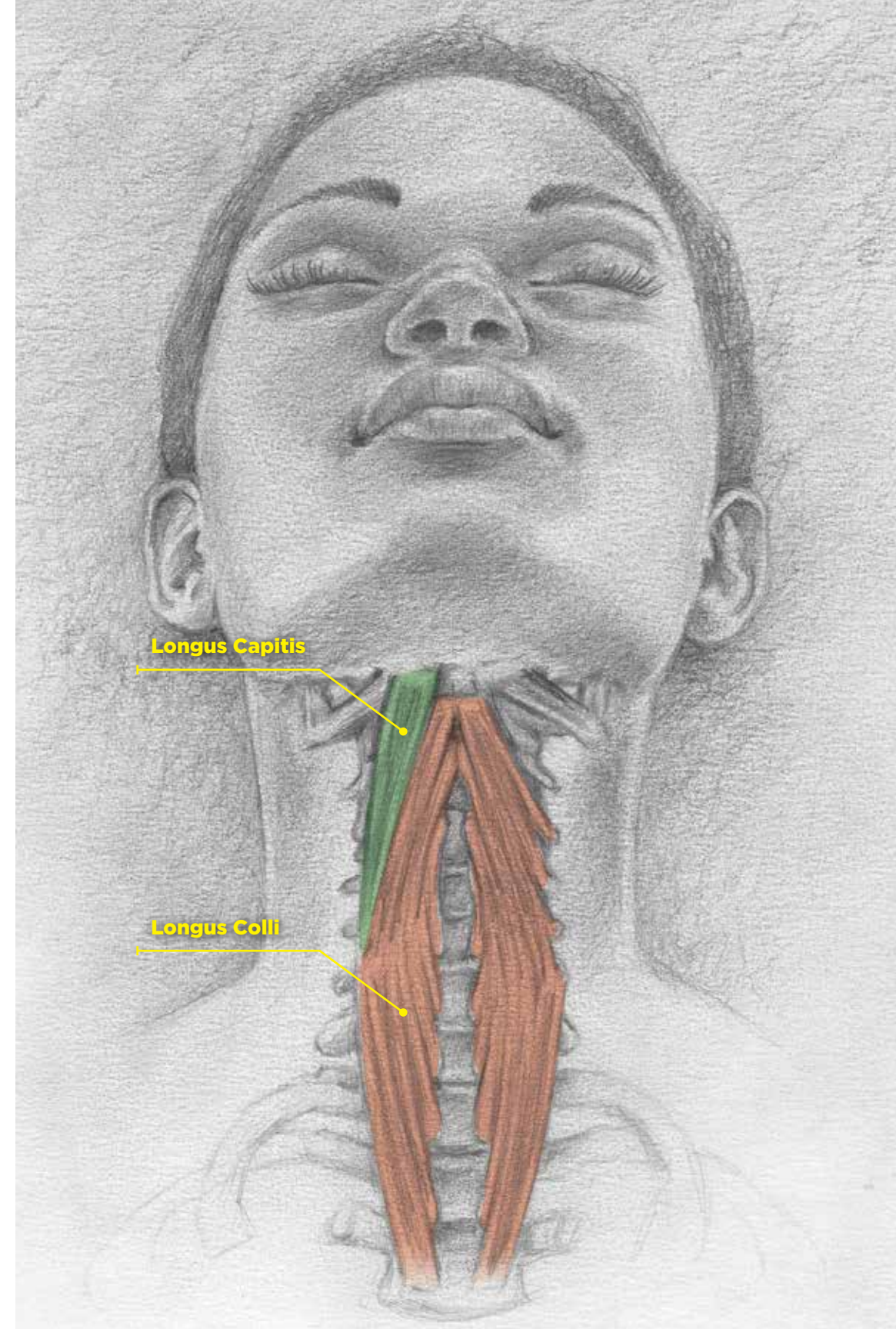
**LOCATION:** These muscles lie in the front of the neck.

**ACTIONS:** These two muscles work together to perform the chin tuck movement which counteracts the forward head pull of gravity. The forward head posture is also worsened when the headache-generating muscles that attach to the back of the neck and head become tight. Weak longus capitis and longus colli muscles allow the head to slide forward when they do not have enough power to counteract the muscles in the back of the neck, such as tight sternocleidomastoid<sup>28</sup> and suboccipital muscles. Strengthening the longus colli and capitis muscles in the front of your neck will correct the forward head posture which can help decrease your headaches.<sup>29-31</sup>

The forward head posture has been found by some, but not all, researchers to be present in cervicogenic, tension, migraines, and even post-concussion headaches, as well as neck pain and temporomandibular joint dysfunction.<sup>32-34</sup>

As you contract the longus colli and capitis muscles you will feel the headache muscles in the back of the neck stretch out. When doing the chin tuck exercise, remember that simply looking downward with the eyes can help these postural neck muscles to contract.<sup>35</sup>

Go gently when training the longus colli and capitis muscles, as the goal is to build endurance and control, not purely strength. You do not want these sensitive muscles to be sore from an overaggressive workout.



## SLEEPING POSTURE

After spending time and effort to get the neck muscles loose and relaxed, many people wake up with their neck muscles having regressed to their stiff and sore position. Try this simple yet effective method to help keep the neck and spine in proper alignment when resting. Though you can not control how your neck and trunk twists during the night, you can make yourself less likely to wake up in a twisted position by sliding a pillow underneath your trunk. If the pillow is on the right side of the trunk, the shoulder is supported comfortably and will no longer tilt the trunk to the left. The entire spine, including the neck, now straightens out. An extra benefit for those people with right-sided shoulder pain is that their right shoulder is now lifted off the bed somewhat, which reduces the body weight pressing upon it. Add an appropriate neck pillow or towel roll inside the pillow case to fine tune your neck comfort while sleeping. Consider sleeping on a couch to block your spine from twisting and hurting the neck muscles during the night.



*Excessive painful curvature*



*Corrected straightened curvature*

## COUNTERSTRAIN

When the usual stretching and relaxation techniques have not worked to decrease tender points in the neck, another method known as Strain-Counterstrain may be useful, which was introduced by Dr. Lawrence Jones. *This reference to Dr. Jones is not intended to imply any endorsement or recommendation by the estate of Dr. Jones of this book.*

In some people, stretching does not work well because the muscles are extremely irritated. For example, you have muscles in the back of your neck that tilt your head backwards. If these muscles are very tight and in spasm, they will hurt if you try to bend your head forward. If you try to stretch these tight neck muscles, you will only further aggravate them.

The reason that some neck muscles will not stretch out is that they have a faulty nerve hookup that tells the muscle that it is being overstressed before it has even reached its normal resting position.<sup>36</sup> The tight headache muscle in the neck never relaxes because it “thinks” it is already relaxed, when, in fact, it is really stuck in a tight and stiffened position. This type of reaction might occur if you have had a car accident or some other trauma, where an abnormal protective reaction has been set up even though the danger has now past. When you try to stretch the neck normally, the defective nerve reaction tries to protect your neck by not letting the muscles release their grip.

You can use the Strain-Counterstrain method to trick this dysfunctional nerve reaction by placing the neck muscle into a “reverse stretch” position by putting it on slack. You place a finger on a tender muscle and feel the pain fade away when you reach the position of maximum comfort. You stay in this comfortable position for 90 seconds and then slowly return the neck to its original position slowly, with the tender point you started with now gone.<sup>37</sup> I find a slow return of ten seconds or longer to be useful. Check the muscle daily to see if it stays released. If the tender point returns, repeat the technique.

For example, if headache muscles in the back of your neck are sensitive, and painful when stretched, you could relieve those muscles by the following technique;

1. Place the first and second fingers on the most tender point in the tight muscle at the back of the neck (*Figure 14*).
2. Tilt the neck into a slightly backward bending motion, which is the direction the tender muscle is already pulling the head. This tender muscle now starts to relax and becomes less tender (*Figure 15*). There should be no sensation of dizziness, nausea or pain in this position.
3. Hold the neck and head in the position where the trigger point is the least tender for 90 seconds which will shut down the spasm reflex. The muscle needs to be relaxed long enough to reset it into a more normal resting tone. The offending muscle spasm has been perpetually set at a high level of contraction. The Strain-Counterstrain treatment helps break it out of this painful cycle.



*Figure 14*



*Figure 15*

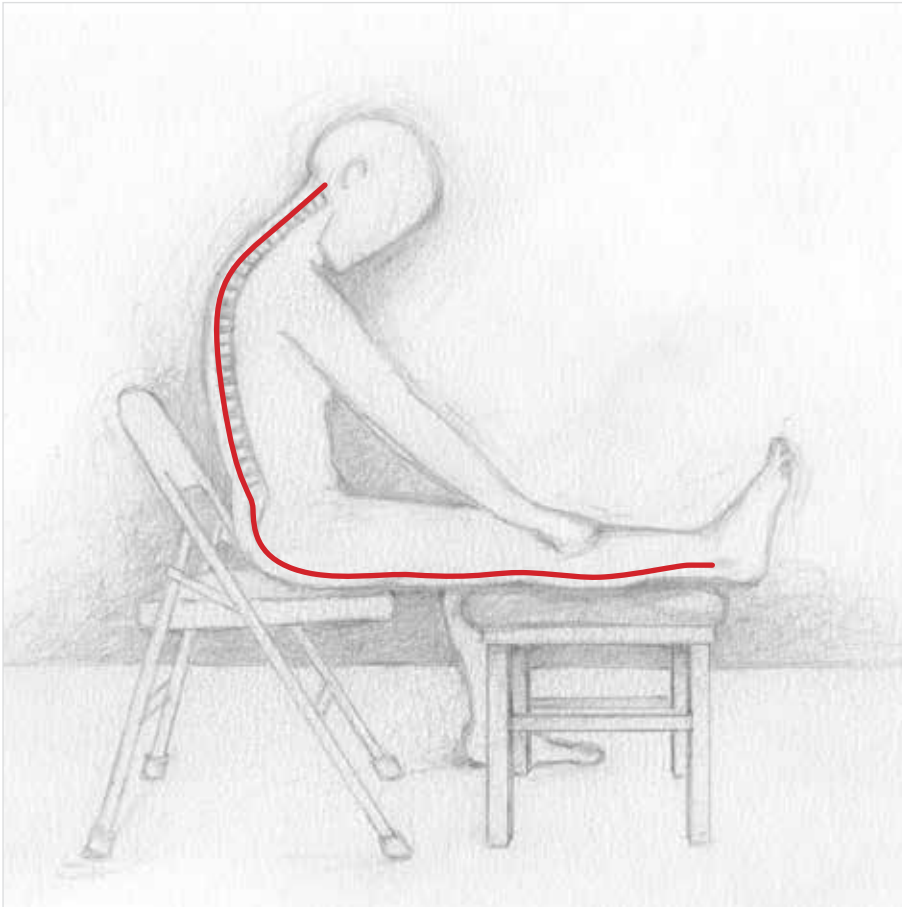
4. If a person sneezes or coughs before the spasm has enough time to release, the process needs to be started over. After 90 seconds, return the head slowly to the starting position and recheck the point, which should now be at least 70 percent less tender. The neck will move more freely after the Strain-Counterstrain release than was possible just a scant two minutes ago.
5. Always start treating the worst point first, and as it releases, move on to the secondary points.<sup>38</sup>

I was fortunate to have been instructed by Dr. Lawrence Jones, a chiropractor who discovered this treatment. He had been treating a client with a difficult pain condition that was resistant to conventional methods. Dr. Jones' was called away in the middle of the treatment, and he helped the client into a comfortable position to await his return. When Dr. Jones came back to resume his efforts, the client stood up pain free for the first time and thanked Dr. Jones for his breakthrough treatment. After the client departed, Dr. Jones reflected on the mechanism of his relief and developed this Strain-Counterstrain treatment that worked on the principle of putting the tender muscles on slack, which interrupts the abnormal cycle of nerve impulse firing that keep the muscle tight and under perpetual strain. As the abnormal nerve-muscle reflex is shut down, the tight muscles release and pain reduces.

Points for headache relief are frequently found in the area of the first four neck vertebrae.<sup>39</sup> There are many positions to relieve a tender point which include a combination of neck bending up and down, turning and sidebending. The optimum position where the tenderness is minimal is called the "mobile point."<sup>40</sup> The tenderness of a neck point may be affected by the position of your arm and shoulder blade. You will find that just moving your neck or arm just slightly will affect the tenderness of the point. As you hold your neck into a position to relieve your primary point tenderness, you may at times feel sore in another secondary point that has been tight. You may initially need help from a Strain-Counterstrain health care practitioner to coach you in how to find just the right positions to release your trigger points.

## HEADACHES FROM NERVE TISSUES

As if muscles and mental stress were not enough to contend with stubborn and non-responsive headaches, it is possible that some of the tissues surrounding the muscles and nerves going into the head may be causing the headaches. Muscles are surrounded by tissue called “fascia” that supports and separates them from other tissues. Tissue called the “dura” contains and protects the nervous tissue. If this tissue is inflamed, stretching it too far can increase pain along the spinal column. For instance, when a person has a sciatic nerve causing back pain, lying flat on a mat and raising the leg straight up will pull on the sciatic nerve, and the dura that surrounds it, and can cause sharp, stabbing pain in the back.



This dural nervous tissue is a potential cause of cervicogenic, tension and migraine headaches.<sup>41-42</sup> Neck dural nervous tissue may become inflamed following trauma, such as a car accident. Even small movements of the neck can cause sharp pain in both the neck and head. The nervous tissue can be particularly irritated with a rapid drop of the head, which occurs if a person allows the head to slump forward (Figure 16).

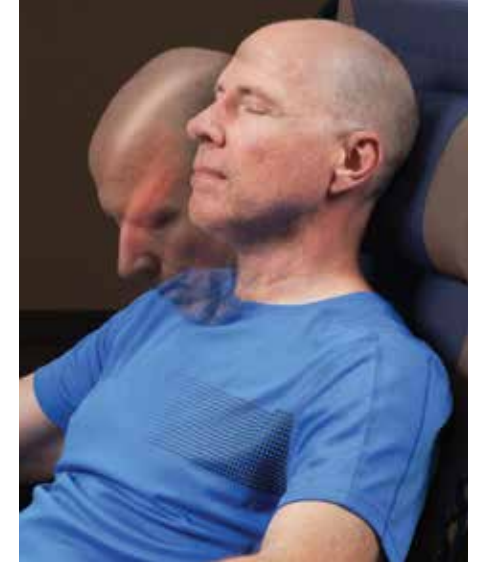


Figure 16

Dropping the head down rapidly, even one time, can cause a pain reaction from the injured tissues that can last for hours! To protect the neck, try a soft support under the neck, such as a collar or thick scarf, to remind yourself not to bend down or up but to turn the neck in whatever available range of motion you can manage without causing it to flare up (Figure 17). It is the up and down motion of the neck that usually causes the most damage. Use of a neck support can ease neck and head pain. People who wake up in the morning in extreme pain, at times find considerable relief by wearing a soft collar to bed. The collar minimizes the neck movement occurring in sleep that keeps the neck inflamed, making people miserable upon waking up. If given a chance to rest, instead of being re-aggravated every night, the sensitive neck structures can heal. People need not be overly concerned about the neck stiffening from wearing a soft cervical collar!

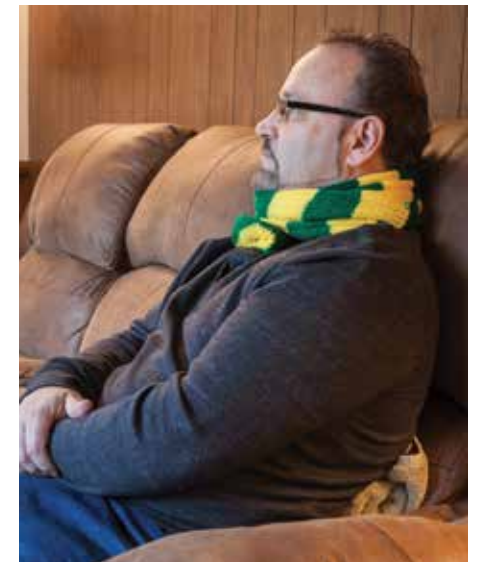


Figure 17

People need to escape the constant inflammation cycle. I find it far easier to work through minor neck stiffness than trying to make progress with someone who has inflammation of the neck structures. A health care practitioner can help guide you to regain motion and strength after the neck inflammation fades.

With some people I find that it is not just the nervous dural tissue in the neck area that is the problem. The nervous system connections spread from the neck to the leg.<sup>43-44</sup> The nervous system spreads throughout the body like a network of webbing, where stimulating one part may cause a tension reaction in another part. Let's look at that straight leg raise mentioned earlier. With super-sensitive headache clients, stretching the leg not only affects the back, but even reaches into the neck and ultimately the head. When the usual conservative treatments fail, the gentle stretch to the leg can reduce headaches. Gentle is the key concept here. For example, I find that only one leg at a time can be stretched. Other neural tension stretches in the arms do not seem to affect headache pain as much as a leg stretch can. If no response is realized from a leg stretch after one or two minutes, abandon this treatment mode. The dural nervous tissue needs to be moved carefully, as aggressive movements can transform a treatment from helpful to hurtful (*Figure 18*).

A person may be so sensitive that a leg stretch, in rare situations, can aggravate the headache. A therapist skilled in this field of neurodynamics can demonstrate how to put the nervous tissue on slack, not stretch, to de-escalate the nerve irritability. If you have been suffering with a headache for a long time, without finding a treatment that works, you could explore the possibility of nervous tissue irritability.



Figure 18

## ACTIVITY IDEAS FOR TENSION HEADACHES

### BODY MECHANICS



Body mechanics during lifting can have a profound effect on the buildup of tension in the neck and back!

Use the many joints we have available to pick up an object (*Figure 19*). The ankles and knees should be slightly bent, knees spread apart, feet flat on the ground, and turned out slightly. Hold the object close to the body. Keep the neck straight with the eyes looking straight ahead, not downward. Sometimes people lift properly, but then forget that when the object is put down the proper lifting process needs to be practiced in reverse.



Figure 19



Figure 20

The human head weighs about 10 pounds. When the head juts out in front of the trunk, it puts strain on the headache muscles of the neck. The head should be lined up over the trunk, not out in front of it. Lifting with straight arms can increase upper shoulder muscle strain and be another source of neck strain. To show how dramatically weight lifting capability changes with poor mechanics, bend your elbow so that your hand is close to your body, and then have someone apply pressure to your arm (*Figure 20*). When the arms muscles are engaged, they can absorb the force rather than shifting the force to the neck, shoulder or back. To illustrate this, straighten your arm and have someone apply pressure to the hand (*Figure 21*). The pressure required to cause the arm to collapse is a fraction of what was needed when the elbow was bent. Where does the extra force end up? The shoulders hunch, the neck muscles tighten, and the back strains to absorb the extra load. A 10-pound weight



Figure 21

close to the trunk can effectively turn into a 60-pound weight when the arm is straightened out. For instance, if you lift a gallon of milk or frying pan, make sure you are not initiating the movement by hunching your shoulders upwards, which can trigger your headache muscles.

## CONDITIONING EXERCISES

It is important to be able to increase strength and endurance of the neck and arm muscles without tightening headache producing muscles. The following exercises with weights and theraband specifically do not raise the arm beyond the shoulder level. Lifting weights or other objects improperly while reaching overhead can overwork the upper trapezius and sternocleidomastoid, two major headache-producing muscles. There is also the danger of irritating rotator cuff problems when reaching overhead. These low-intensity fitness exercises are useful for shifting the workload away from the shoulder-hunching muscles. Stop these exercises immediately if any discomfort is felt in the shoulder or neck. The exercise should also be abandoned if there is any joint pain in the elbow or wrist. Keep a slight bend in your elbow to protect it. Pressure felt just in a specific joint, rather than in the target muscles, means the exercise is not appropriate, and either the resistance should be reduced or the exercise discontinued entirely. Sets of ten to fifteen repetitions are usually best. Consult with a doctor before starting any exercise program.

### BICEPS CURL

Do biceps curls using the arm muscles, not shoulder hunching muscles, to lift the dumbbell. To start the biceps curl hold the weight so it is facing forward, then rotate the thumb outwards as you bend your elbow to lift the weight. The opposite hand can be placed on the upper trapezius to ensure it does not fire and hunch upwards, as it may well attempt to do. The muscles in the hand, elbow and upper arm muscles should contract before the upper shoulder muscles and neck engage. Whether by habit or general arm weakness, you may be firing the wrong muscle first, and leading with the upper shoulder girdle muscles. If this occurs, reduce the weight to where only the arm muscles are doing the work, and the upper trapezius contraction can be shut down. Do biceps curls with one arm at a time to relieve strain on the heart (*Figure 22*).



Figure 22

## ARM PRESS

The arm press is another excellent conditioning exercise that strengthens a multitude of muscles (*Figure 23*). The chest muscles,



arm muscles and even the abdominals are worked in this exercise. Avoid straightening the arm out fully, as you may get elbow strain or excessive upper trapezius activation. Grasp the weight keeping the thumb pointed upwards for less chance of irritating the rotator cuff. Also, avoid going overhead with your lifting program, as it becomes exceedingly difficult to keep your shoulders from hunching, which can lead to upper shoulder and neck tightness. Only use one arm at a time for this exercise.

A bit of a digression may be useful for those people who would like to work their abdominal muscles. To direct the workout

force to your abdomen, put a towel roll, cushion, or small pillow behind your back. Without the back support, pushing the arm out in front of the body causes the back to slump. A back cushion blocks the back slumping so the force is now absorbed by the abdominal muscles.

## DELAYED ONSET MUSCLE SORENESS

The workout of today may turn into the muscle burn of tomorrow, which is known as delayed onset muscle soreness. This delay is a key factor to remember when analyzing your headache pattern. If mild muscle soreness the day after exercise remains in your arms, legs and stomach, this is good. However, if your tension headache seems to become especially strong without apparent reason, reflect on what you did the day before which might have stiffened the headache muscles. The delay principle also comes into play when one has a stomach upset from food eaten hours ago or has a hangover headache from too much alcohol the previous night. Likewise, mental or physical tension from the previous day may show itself as a headache the following day.

## TEN SET SYSTEM

What is a good weight lifting system to use? A goal of any exercise program is to keep muscles strong and flexible and improve the weak and tight muscles. I find the Ten Set System, also called the German Superset System, to be an efficient way to build power while minimizing the risk for injury.<sup>45-46</sup> Find a weight you can lift for 10 sets of 10 repetitions in 10 minutes (roughly one minute per set with both arms). An advantage to this system is that the more prolonged, higher repetition workout can give a person warning prior to overloading the muscle. Increase the weight gradually, maintaining the 100-rep ceiling, and you will find you can gain strength doing this exercise just one time a week per targeted muscle.

Other systems with heavier weights and lower reps increase the risk of injuring joints that are not being targeted. For instance, using a heavy weight to strengthen the biceps can overload the wrist area, which could be the weak link in the musculoskeletal system. Doing the higher repetition program allows all structures to gain strength at the same time and gives a person the option to stop at 70 reps, for instance, if they feel tissue overload sensation creeping up. Doing just a few rapid jerks can damage tissue before one has had a chance to pull back. A person can continue beyond 100 repetitions if desired, but I find most people are content to stop at 100 repetitions. If you love to exercise and start going past 100 reps, you are really kicking in your cardiovascular system and will get both strength and cardio effects thrown in together. There are certainly other more aggressive programs to achieve pure muscle bulk, but most of them ignore the possibility that one's heart may be the weak link in the muscular system.

## CARDIO CONSIDERATIONS

People forget that their hearts are their most important muscle and that they should be aware of how it responds to working out. Know what your safe target heart rate zone is based on your age and medical condition. Those heart rate guidelines should be discussed with your personal physician who knows your personal health history. Your heart should have a regular rate and rhythm, and if weight lifting exercise

creates skipped beats or a racing heart rate past the target zone, downgrade the exercise intensity! If you are huffing and puffing and have a hard time talking because of how hard you are working, you need to lighten up! Learn how to feel your heart rate on your wrist, since electric monitoring devices are not always accurate. If they are in error, they tend to undercount the heart rate giving a false sense of security, and the monitor might not even detect a person's heart arrhythmia.

In terms of the muscle strengthening program, don't lift two dumbbells at once! Rather, switch the dumbbell from one side to the other after every 10 repetitions which keeps the strain on the heart at 50% of what it would be with two dumbbells. One arm rests while the other works, and vice versa. It is important both to give recovery time to the muscle being exercised as well as a smoother, less up-and-down-stress on the heart. A higher volume of at least a 100 lower-weight repetitions spreads out the workout force on the heart.

Monitor your heart rate, not just during your activity but hours later as well, to see if there are unusual skipped beats. Just as there may be delayed onset muscle soreness in the arms or legs from a workout program, the heart may likewise have been worked too hard and respond by skipping beats hours after the exercise is over. I believe many people could avoid a premature death if they would have simply checked their heart's response to heavy activity and eased off when the rate became excessive. It is a healthy sign if the heart rate increases with exertion, but then drops rapidly after the exertion has stopped.<sup>47</sup> If your heart rate stays high for a long time after exertional activity, it is trying to tell you that you are doing too much. Please listen to your heart!

### THERABAND WORKOUT

Perhaps dumbbell weight lifting is not suited for you. However, since people with tension headaches likely are weaker in their arm and neck muscles, a strengthening program of some type is good for headache management.<sup>48-49</sup> The theraband workouts do not involve the heavier

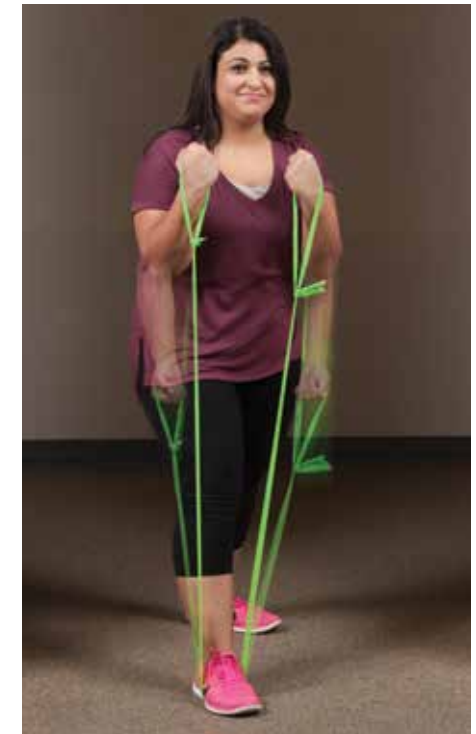
exertion of weight lifting and yet will tone up the muscles. Many people prefer exercising with theraband while watching television or listening to music. As with the dumbbell weight lifting, you need to use your muscles without hunching the shoulders and maintain good posture. Theraband resistance varies with the amount tension in the band and is not a constant weight like a dumbbell. A guideline for theraband exercise sets is that a person should be able to do 10-20 repetitions prior to fatigue. If a person struggles to do 10 repetitions, the band is stretched too tightly. If 20 repetitions can be done easily without much effort, the band is not providing enough resistance. Remember to breathe out with the exertion phase of the repetition and breathe in during the recovery phase, which keeps the pace of the exercise neither too fast nor too slow.

***Four excellent theraband exercises that do not involve overhead motion and work numerous arm and shoulder muscles are as follows:***

#### ***Bicep curls***

The bicep curls can also be done sitting by stepping on the band or in the recliner by wrapping the band around the thigh. Do not hunch the shoulders!

*(Figure 24)*



*Figure 24*

### Arm press

Wrap the band around the trunk, underneath the armpits. Hold the band with the thumbs up, as there is less risk of irritating the rotator cuff than when the palms or thumb are pointed downwards. Some people like doing this exercise while lying on the foam roll, though television viewing becomes more difficult (*Figure 25*).



Figure 25

### Shoulder blade squeeze

This exercise activates the shoulder blade muscles as they squeeze together. Thumbs should be pointed outwards and the wrists should be kept straight and rigid. Pillows between the arm and trunk for a better shoulder angle may benefit some people. There *must not be* any shoulder pain with this exercise. Since this exercise involves fewer muscles, a lighter grade band may be used than with the bicep curls and arm press exercises (*Figure 26*).



Figure 26

### Shoulder blade pullback

While maintaining good posture, drop the the shoulder blade muscles down and backwards. Attach the theraband to a stable object so that it angles slightly downward as you squeeze your shoulder blades together. Do not bring your elbows beyond your trunk level. Do not roll your shoulders forward and lose your good posture (*Figure 27*).



Figure 27

An advantage to using a theraband is that it permits exercise in many different directions. Whether using weights or theraband, the goal is to strengthen and improve coordination in the trunk and arms while keeping good posture and relaxed headache muscles.

## SUMMARY

Tension headaches are very common and may be a daily struggle in a stressful life. Physical therapy techniques can provide more headache relief than most people realize.<sup>50-52</sup> Posture correction is important because the same muscles that become tight also produce headaches.<sup>53</sup> Successful treatment includes stretching and massage of these tight muscles. For long term headache relief, exercises to strengthen and increase the endurance of the muscles in the front of the neck are essential. Carve out time in the daily schedule for exercise to convert your weak and tight neck and shoulder muscles into ones that are strong and flexible. Remember, if your pain continues or increases, stop these exercises and call your doctor or healthcare provider.