

NECK & HEAD UNIT MODULE 2

Welcome to Beyond Trigger Points Seminars, Neck & Head Unit, Module 2 on the splenius capitis and cervicis, posterior cervicals and suboccipital muscles. Good posture is the attitude of the body. Lucy told Charlie Brown, in order to look depressed Chuck, slouch your shoulders and stare at the floor. There is some truth rooted in Lucy's advice, for not only will poor posture make a person look depressed or disheveled, but bad posture will cause the body parts to chronically misalign. Poor alignment leads to increased strain on select muscle groups and risk of injury and pain. Good posture, allows select muscles to maintain fully relaxed, static postures, such as when quietly standing. Your mission in this module will be to identify the neck muscles responsible for keeping the head in a perfect, equipoise position.

On page 14 of the study guide, we will begin this exploration by describing the action of the splenius capitis and splenius cervicis muscles. Both these muscles are found in the second layer beneath the trapezius muscle and both have the same three actions:

1. Bilateral extension, keeping the neck upright
2. Unilateral rotation of the neck to the same side
3. Check-reins flexion, like the levator muscle mentioned in Module 1, these muscles pull back on the head when the neck is forward flexing

To help you remember the pain patterns of the splenius capitis and cervicis, we can nickname their distinct headache pattern as *Ache Inside the Head*. On page 15 of your study guide, space is available to write, Ache Inside the Head. Now let's identify the locations and pain patterns of each of these two muscles by looking at page 433 of the text book or on page 15. Do you see the one documented trigger point in the splenius capitis and the two trigger points (TrPs) in the splenius cervicis? Draw an "X" in the area you think the TrPs are and then draw the pain patterns. The documented splenius capitis TrP located

at the C2 level is reported as pain or numbness to the vertex of the head. Your client might report this pattern as pressure at the top of their skull. As one of my patients said, if I could drill a hole at the top of my head, I could relieve this pressure. The splenius cervicis TrP is felt at the angle of the neck, horizontally through the cranium and can blur the vision. I think if you start looking for these trigger points in your clients with headache, you'll be able to reproduce and treat these commonly reported headache patterns. Trigger points develop frequently in these two muscles because they are often involved with cervical articulation and whiplash accidents.

So if we answer the question at the bottom of page 14 of the study guide. "What other diagnoses may the patient have been given when presenting with splenius capitis and cervicis involvement?" the first is:

1. Cervical articular dysfunctions

When your client is having their "OA" (occipitoatlantal articulation) C0/C1 or C2 vertebrae adjusted by a chiropractor, think splenius capitis involvement. When C4/C5 is being adjusted, think splenius cervicis involvement. On page 16 of the study guide, I wanted you to have the documentation on the four different ways a car can be struck: head on, rear end or broadside, and its relationship to trigger point development in a number of muscles we are studying in this unit. For example, in head-on accidents, 94 people who were headache free before the accident developed the splenius capitis trigger point you just drew. When T-boned from the driver's side, 56% of the study group developed a trigger point in their left levator. The left semispinalis capitis developed a TrP in 62% of the individuals involved in an acceleration-deceleration accident. The next diagnosis to write down is:

2. Whiplash syndrome also referred to as hyperextension/hyperflexion strain

I'm going to talk you through a palpation exercise of the splenius capitis because tomorrow I want you, with great assuredness, to palpate and massage the splenius capitis. Locate the left mastoid process on your skull just behind your earlobe. Slide your finger medially and inferiorly onto the superficial splenius capitis fibers. Using your left fingertips distinguish the lateral border of the left upper fibers of the trapezius and the obliquely running fibers of the splenius capitis. Do you feel how the splenius lies between the superficial portion of the SCM and the upper trapezius? Distinguish the trapezius fibers from the splenius capitis fibers by slightly rotating your head to the left. Have you rotated your head slightly to the left while keeping your finger near the skull? Do you feel these oblique fibers contract while the trapezius remains passive? Just for the fun of it, let's switch and give the right splenius capitis a little massage too. A splenius capitis trigger point like all other muscles, is palpated by feeling for the hypersensitive nodule within a taut band of muscle fiber. So, first feel for a taut band with a flat, snapping palpation; I use a cross fiber friction stroke, then stop and slowly compress the trigger point for 8-10 seconds. Hopefully, you don't have a trigger point in your splenius capitis, but if you do, is it referring to the area you drew? If it's referring some place other than the documented pain pattern, you may be on a different muscle. If needed, stop the recording now and listen again to the palpation directions again until you have confidence feeling for both splenii muscles.

Now, move your fingertips half way down your neck. You can feel both the splenius capitis and cervicis by rotating the head 45° to the right while palpating into the left cervical lamina groove. Are you palpating in the lamina groove a few inches down from your skull? The lamina groove will feel like a troughlike space between the spinous and transverse processes of the vertebrae. Actively extend your neck slightly to shorten the splenii fibers while palpating through the overlapping trapezius. These muscles will not be particularly distinct; however you will feel the density of both splenii in the space, again, between the spinous and transverse processes of the cervical spine. At the C2-C3 level you will find the documented trigger points

for the upper splenius capitis and cervicis. If you haven't already, let's rub a little bit on the other side too!

On page 17 of your study guide, we are answering the question, "What activates and perpetuates the splenius, posterior cervicals and the suboccipital muscles?" All of the posterior cervicals we are studying now are activated and perpetuated through one of the following four categories:

1. The first is "postural strain".

- Having a long neck can create increased load to the cervical muscles. So if you have a client with a long slender neck, like Olive Oil of Popeye fame, then these necks may be more susceptible to cervical strain than the short, thick necks of a football player.
- Another example of postural strain is an increased thoracic kyphosis. We all have a thoracic kyphosis. It's the normal posterior curve in the thoracic spine. What we're talking about here is an over curvature. When your client presents with a rounding in their thoracic spine, you would expect to see more involvement in their posterior cervical muscles.
- Often accompanying a rounded thoracic back is a forward head position or an FHP. An FHP can create increased muscular tension, osseous changes and compression pathology as we shall see.

Did you know every one degree of flexion off of neutral creates ten pounds of extra work for these neck muscles? Even if you were Charles Atlas, the strongest man on the planet, your neck would fatigue if it was chronically pitched forward off neutral. Imagine your head was a bowling bowl resting in the palm of your hand. If your elbow was anchored on a table and the bowling bowl was held directly on top, then you could hold the weight of the ball. If however the forearm is angled forward shifting the weight of the bowling bowl with it, then even Charles Atlas' bicep would fatigue quickly.

Quoting from our textbook on page 810, "Normally, when the check bone is aligned over the sternal notch, [as shown on page 19 of the study guide on the left hand figure] the head and neck are in an erect

position without muscular overload.” In our workshop, we measure this alignment by placing the end of a long chop stick on the check bone. A straight line is created between the check bone and sternum when the head and neck are aligned. From the back, another measurement of 6cm is observed as being the normal cervical lordosis.

If the head is alighted on top of the spine, then the posterior neck muscles actually become electrically quiet. We do a huge service to our clients when we bring their attention to proper neck alignment.

2. The second category is “impact injuries.” I already mentioned whiplash. Head-on impacts in particular have a high incidence of splenius capitis trigger point formation.

3. The third category is “activity overload.” A good example of this is the spectator neck we talked about in Module 1. My sister, who spends a lot of time watching her kids swim, calls it a bleacher neck. You'll see people in bleachers, without back support, tend to do excessive neck extension because they are propping their chin in their hands. Bird watchers often hold their binoculars to their eyes by supporting their elbows on their knees, which effectively shortens the posterior cervical muscles. Compensation for eyeglasses is another activity overload particularly when people are wearing infinite bifocals or are avoiding looking through the lower rim. These micro-movements of the neck and head adjust the vision through the eye glasses but create strain on the suboccipitals.

4. The final category is “environmental strains”, such as sleeping under a fan or vent at night with the neck exposed. When a muscle gets cold, the muscles contract eventually leading to shivering.

Let's now answer the question, “What findings and tests are indicative of splenius involvement?” I'll list three: an accident, a hammered neck and other irritable neck muscles.

1. Ask yourself, has your client been in an accident? Query your patient for a detailed description of the accident, the onset and duration of pain. If it's a postural strain, find out how long they are holding suboptimal positions. For example, if they are at a computer straining their neck to look forward at the screen, find out how many hours a day they're doing that. The body can compensate for a little bit of strain but wears out with chronic overload and too short of rest periods. This is as important for your clients as it is for you working around a massage table. How well are you scheduling in breaks between clients throughout the day and are you resting your body on your days away from the table?

2. Another finding is having a feeling of a "hammered neck." You remember those cartoons when someone is hammering the character from the top and the head lands on their shoulders. That is a good visual of how it feels when these muscles are involved. It feels as if they need a sling to hold their neck up. In fact, soft collars worn loosely around the neck are often recommended to keep the head supported following an acute injury; and for a short duration of time, this is a helpful aid.

3. The levator and other posterior cervicals are often involved when the splenii are irritable. If there is a postural strain, complete recovery of the splenii generally requires inactivation of trigger points in the sternocleidomastoid and the pectoralis muscles. Do you remember the pain pattern you drew to the top of the head and behind the eye? There are seven other muscles with that pain pattern. In the workshop, we will be learning a treatment protocol for the whole area.

Which brings us to page 18, what are the correctives?

1. Keep the neck warm.

2. Practice good posture while sleeping, standing and sitting. The second figure on page 18 shows how a desk and chair can be better arranged to encourage good seated posture. Do you see how the material on the desk is elevated, the chair has armrests and the back is erect?

The goal is maintaining a straight spine regardless of your activity. More patient education handouts can be found on the resource page at www.beyondtriggerpoints.com. Feel free to download any of these. Posting these exercises on a refrigerator or mirror, reminds your clients to regularly repeat them throughout the day. In our workshop we will be practicing a number of postural exercises for ourselves as it relates to moving around a massage table.

Don't you just wish you could put a little video camera on your client's shoulder so you could see how your client is using their body? Putting a long mirror next to their desk allows them to monitor their posture. Regardless though of how good their posture, instilling the importance of changing positions frequently may be the most important behavior modification you can suggest. For some, this might mean setting an alarm across the room, reminding them to get up, stretch and turn the alarm off. For others, imagining the movement of a child is helpful. Young children more naturally change their positions every few minutes and as adults, we can remember how it feels to move with more fluidity.

3. Use lumbar support especially in cars with bucket seats and no back support. Dr Travell had an easy remedy. She recommended rolling a 12" (inch) wide towel into a 3" - 4" thick roll. Then, place it right where a belt is worn in the small of the back. Just by providing lumbar support for the low back, the head will automatically align. I'm sitting on a back orthotic now that places my spine in a more anatomically neutral position. It came highly recommended from a client of mine who works at a computer and after having tried it myself, I can

recommend it to you too. Information is under the resource tab at the website.

4. If the lower rim of eye glasses is obstructing reading and being compensated for by a forward tilt of the head, have the lens professionally tilted 30° or more, as shown on page 18, to bring the lower rim against the check.
5. Stretching the neck is another corrective. All of the muscles we are studying in this module are stretched by flexion. A self stretch for the suboccipital is to have the patient bring their chin towards their chest. Then have them hook the fingers of one hand under their skull and apply upward traction at the occiput. This upward traction releases compressive forces in the cervical articulations and takes up the slack while the posterior muscles relax. This stretch is particularly helpful when done under a warm shower. A client handout of this stretch can also be found under the resource tab of the website.

Now, let's consider what is happening to the structure of the woman shown on page 19 who presented to the office of one of my graduate students. When the head rides forward, as shown on picture 1, you can see how the back of her skull rocks down towards the shoulders and the chin juts forward. This head position shortens the suboccipitals, posterior cervicals, upper trapezius and splenius capitis muscles. These muscles are in charge of keeping the eyes even with the horizon. Our body reflexively is always attempting to right our head so our eyes are horizontally even. If we can't bring the eyes even with the horizon, we feel dizzy.

You heard earlier; a forward head position often shows a loss of the normal, 6cm, cervical lordosis with a relative flattening of the curve. We call that a military neck. Do you see on picture 1 & 2 on page 19 how this woman's neck is hyperextended? Even though the neck is hyperextended, the cervical spine can have flattened. This position

overloads the sternocleidomastoid and the splenius cervicis potentially leading to trigger point formation.

In addition to extra muscular work, when the cervical spine flattens, the junction between the occiput and C1 becomes strained, increasing the likelihood of compression pathology at the base of the skull and gradual structural limitations. Eventually the joint capsules adhere and range of motion is lost. For my grandfather, these changes in his neck meant he couldn't turn his head to see behind him and he lost his driver's license. For others, compression pathology might affect the nerves in the arms causing radiculopathy symptoms.

Cartilaginous structural changes are diagnosed as degenerative arthritic conditions and facet disease. How many of your patients have been given the diagnosis of degenerative joint disease or arthritis? Is it any mystery this might develop if forward head posture is uncorrected? On top of this cartilaginous change, superimpose the muscular tension of the muscles we're discussing. Gradually there's going to be a pathologic neuromuscular reaction when trigger points form in this region. In summary, a forward head posture has the potential for, and there is room for you to jot these bullets on page 19:

1. Increased muscular effort
2. Osseous changes and
3. Nerve root compression.

In Module 4, we'll also be looking at the intra-articular pressure on the TMJ caused from a forward head position. As massage therapists what part of this pathology can we directly affect? I hope you're all saying the myofascial component.

You know, if we can affect the soft tissue early enough post injury, or early enough in life, then we can prevent the osseous changes that are bound to happen when the neck is in poor alignment. Ida Rolf, founder of the Rolfing method and a pioneer in structural integration, said the very best time to make a change in someone's structure is at

NECK & HEAD UNIT MODULE 2

the age when they would wear braces on their teeth. Wouldn't that be great if we could take kids with poor posture and affect them in their early teen years? Then they wouldn't grow to have detrimental osseous changes, headaches and temporalmandibular joint problems. We create space in their body. However, I believe our clients are never too old, too stiff, and too sick to start from scratch again. There's always room to create room.

Now we will move on to describe the actions of the posterior cervical muscles consisting of the semispinalis capitis, longissimus capitis, semispinalis cervicis, multifidi and rotatores. Just remember, the more superficial, longer fibers extend the neck and head and the deeper more diagonal fibers create rotation.

On page 21 of the study guide you have a picture of the more superficial upper semispinalis muscle. Do you see its three documented trigger points? The semispinalis lays deep to the trapezius and the splenii within the lamina groove. Your fingers need to be butted up against the spine to palpate this headache producing muscle. Trigger point one is a fairly common attachment trigger point located on the occiput. Draw an "X" over TrP1 and TrP2 as you see it in the picture and draw their headache pattern along the side of the head and into the forehead.

Now let's draw the trigger point of the middle semispinalis capitis and its corresponding pain pattern to the occiput. It's difficult to differentiate this third layer of muscle, but if you stay within the lamina groove and use the spinous processes as landmarks, then you are in the ballpark. When a patient presents with this headache pattern to the back of the head, it may be painful to rest their head on a pillow. Again trigger points of the semispinalis capitis at the C4 level refer pain to the occiput.

The deeply-placed cervical multifidi could have a TrP in the same location as the semispinalis but deeper. The documented multifidi trigger point refers to the base of the neck with some spillover down the neck. Draw that pain pattern onto the upper right picture. Any of

the multifidi muscles can harbor trigger points causing pain at the attachment sites of the spinous processes. The short cervical multifidi and rotatores muscles attach one vertebra to another and extend and rotate the vertebral bodies. These short muscles each have their own endplate zone. Since trigger points form in the endplate zone, each vertebral segment could have a trigger point formation. When you are deep in the lamina groove and pressing on an area reproducing sensations like the rays of sunshine, then you know you are in the deep paraspinal region. You could draw a little “X” anywhere along the cervical spine with little sunshine rays around it and that would represent a multifidi pain pattern. Again, the multifidi and the rotatores trigger points cause pain at the attachment sites on the spinous processes.

In many states, chiropractors aren't required to do x-rays. They are palpating, just like us, to determine where the osseous misalignment is. So if you were wondering how a chiropractor knows which vertebrae to adjust, tenderness testing along the vertebral processes is used to identify, and the fill in the blank at the bottom of page 20 is: “subluxations.”

Moving on, the nickname for the suboccipitals shown on page 23 is *Headache Ghost*. Back on page 20 there's room for you to draw its solid pain pattern in line behind the eye. Frequently patients will say their head hurts all over, but what they are doing with their fingers is poking at the base of their skull where it might feel bruised to them and telling you their head hurts all over.

These four very important, little suboccipital muscles control the first two joints at the base of the skull and help stabilize the head. On page 474 and on page 23 of the study guide, there is a picture of the muscles. I am going to zero in on the rectus capitis posterior minor” which I'll shorten to the “RCPM”. If you firmly place your fingers into the base of your skull and then move your eyes rapidly, you will feel the movement of the RCPM. Along with its involvement of eye movement, the suboccipitals control the movements of nodding, rotating and side bending the head from the occipitoatlantal and the

atlantoaxial joint. This muscle is involved with proprioception; we know where our body is oriented in space because of their great precision in moving the head. So again, these muscles control the fine movements of the neck and head and are involved in postural balance.

In craniosacral therapy, the space between the occiput and C1 & C2 is considered a king pin area to release for ideal cerebral spinal fluid flow. Certain methods of chiropractic manipulation only adjust this area; rationalizing that adjustment to these upper two joints effects the alignment of the whole spine. In the book, *Clinical Application of Neuromuscular Therapy*, Volume 1, research findings of the RCPM muscle show a number of very interesting findings. I am highlighting the research findings for you because I think you will have a greater appreciation of your work at the base of the skull from this day forth.

First of all, there's a fascial bridge, a piece of fascia connecting the RCPM to the dura mater; that membrane surrounding and encasing your spinal cord and brain. It's been shown that the fascial bridge resists movement of the dura towards the spinal cord when the head is being moved. So, it looks like there's something very intimate going on between the RCPM, its fascial connection and the central nervous system. In electromyographic studies, it was shown that the RCPM is electrically quiet when the head is correctly aligned over the spine. When the head translates forward the space between the occiput and axis nearly vanishes and the RCPM becomes hypertonic. The high density of muscle spindles found in the RCPM suggests the importance of its role as a proprioceptive monitor of the spine and head. In fact, when there are problems in the suboccipital region, symptoms of dizziness can occur and is termed cervical vertigo. Since the nineteen fifties, the role of this region to orient the body in space has been recognized as an essential component in maintaining balance. This is particularly true in the elderly, because as we age there is a shift from vestibular/inner ear balancing reflexes to a reliance on cervical reflexes for maintaining balance.

Atrophy and dysfunction of the RCPM reduces proprioceptive output. This can destabilize balance. Along with causing dizziness, injury or

chronic dysfunction of the RCPM may irritate the C1 nerve leading to facilitation of sympathetic fibers associated with C1, resulting in a chronic pain syndrome. The noxious stimulation of the rectus capitis posterior minor muscle can cause reflexive electromyographic activity in distal muscles; particularly the *trapezius* and *masseter* muscles. So, when a patient presents with a chronic neck and jaw problem and they have a forward head posture, chances are their problem is being perpetuated by the misalignment of the suboccipital region.

To summarize:

1. There is a fascial bridge between RCPM and the dura mater.
2. Increased pain perception occurs as proprioceptive input is blocked affecting, for example, the cervical and jaw muscles.
3. Cervical vertigo can be a result of a hypertonic RCPM. The other muscle involved with vertigo is the SCM. Stay tuned for that next week.

Again, the suboccipitals share similar corrective actions as the other posterior muscles we learned.

In the workshop, you will apply a wonderfully lengthening and relaxing treatment to all of these posterior muscles.

So there you have it. Feel free to call or email me at info@cathycohen.com. If you haven't already, I encourage you to download the lectures and put them on your hard drive, a CD, or into an MP3 format. Then they are yours for a lifetime. Listening to anything twice brings the highest level of retention. In the next module, we will be looking at the anterior neck and the amazingly complex sternocleidomastoid muscles. So folks, I wish you good posture this week. Thanks for listening. Stay in touch!