

FORWARD HEAD POSTURE & NECK PAIN

The Role of Critical Thinking
in Assessing Postural Patterns

The purpose of this article is multifold. We will first explore the biomechanics of forward head posture (FHP). We will then explore how it, and indeed other postural distortion patterns, are being viewed with relationship to pain and dysfunction. And finally, we will take a step back and use the context of FHP to look at how we know what we know.

By
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FORWARD HEAD POSTURE

Forward head posture (FHP) is the name given to a sagittal-plane postural distortion pattern in which, as the name implies, the head is held forward. This usually involves excessive flexion of the neck at the cervical spinal joints, as well as excessive forward translation and extension of the head at the atlanto-occipital joint. The net result is the center of weight of the head is anterior to the trunk.

Whenever a body part is not centered on the body part below, there is an imbalance such that the body part should fall with gravity. In the case of FHP, the head and neck should fall into flexion due to the force of gravity (until the chin hits the chest). To prevent this, an equal force of extension must be occurring to counterbalance gravity's flexion force. This extension force is usually created by contraction of the cervicocranial extensor musculature in the back of the neck (Image 1). Muscles such as the upper trapezius, splenius capitis and cervicis, semispinalis capitis, and others will have to isometrically contract to oppose gravity (Images 2A–2B, page 56–57).



Forward head posture and the counterbalancing contraction of neck musculature.

So, whenever the person is sitting or standing, which is probably between 16–18 hours a day, cervicocranial neck extensor musculature must isometrically work every second of every minute of every one of these hours, every day of every year of every decade. This use/overuse/misuse/abuse of the extensor musculature of the neck will likely result in neck pain.

The mechanical effects of FHP are not limited to the posterior extensor musculature. The chronic posture of holding the head forward will result in adaptive shortening of the flexor musculature of the cervical spine in the front of the neck, and chronically tight posterior and anterior musculature would then result in decreased range of motion. And, if the anteriorly located scalenes lock short, then the possibility of anterior scalene syndrome (a version of thoracic outlet syndrome) arises.

Tight scalenes might pull the first rib up, approximating it toward the clavicle, and thereby decreasing the costoclavicular space and predisposing the person toward costoclavicular syndrome (another version of thoracic outlet syndrome). The adaptive shortening of the anterior hyoid musculature, with its pull on the mandible, might even precipitate temporomandibular joint (TMJ) syndrome. Chronically tight cervical extensor musculature also predisposes the person to tension headaches, cervical spine osteoarthritis, and disc pathology. None of these effects must follow, but the likelihood of these biomechanical sequelae increases with FHP.

Now, will a person with FHP necessarily experience pain and/or dysfunction? No. The human body has the ability to deal with a great deal of structural asymmetry without necessarily spilling over into patterns of pain and dysfunction. Further, it would make sense from a mechanical point of view that this repetitive physical stress would take many years before tissues are overloaded to the point that pain and dysfunction would occur.

THE RELATIONSHIP BETWEEN FHP AND PAIN

Now let's turn our attention to the relationship between FHP and pain. In a previous *Massage & Bodywork* article, I addressed the advent of what I term *negative ideologies*, examining the ideology that certain muscles cannot be stretched ("Muscles That Can't Be Stretched?," May/June 2020, page 58). I would like to address here another somewhat new negative ideology. This new ideology states that FHP, and indeed most all postural distortion patterns, do not cause pain.

FHP with Dysfunction But No Pain

I have posited that the counterbalancing extension force to prevent the head and neck from falling into flexion is created by isometric contraction of the cervicocranial extensor musculature in the back of the neck. However, that is not necessarily true. And I discovered this with an octogenarian patient who presented to me with the most pronounced FHP that I had ever seen, stemming largely from an incredibly hyperkyphotic thoracic spine (see Upper-Crossed Syndrome, page 58). I fully expected upon palpation examination to find that the muscles in the back of the neck would be extremely tight. But they weren't. In fact, they were extremely loose. And he had zero neck pain. Why?

I found out during joint mobilization examination that my client's cervical spinal joints were effectively locked with no range of motion. I did not have the benefit of an X-ray or any other radiographic imaging to view, but I would venture to say that his body had probably taken the load off his neck musculature by having increased fibrosis of his posterior cervical fascial tissues, including the facet joint capsules, and perhaps osteoarthritic bony fusion throughout his cervical spine. With the adhesions and fusing of these "passive" tissues, his "active" musculature was relieved of all work and responsibility to maintain the otherwise imbalanced posture of his head. Certainly, this individual would be an example of a person with FHP (indeed, even severe FHP) who had no pain at all, but, with all ranges of motion lost, did have quite severe dysfunction.

I always try to be careful with my verbiage. I do not believe that FHP *must* cause pain, or that it must cause dysfunction. In fact, I believe function is much more important than structure, including good and bad postures. Clinically, I often counsel my patients that a small degree of scoliosis, or pronated feet, or FHP for that matter, are rarely important to their quality of life.

But biomechanics, and therefore these pathomechanics, do matter. The presence of any structural condition—any asymmetry of hard or soft tissues—must, by definition, place physical stress forces into the body. The only question is whether they will accumulate to reach a threshold tipping point that impacts the person's life with pain and/or dysfunction.

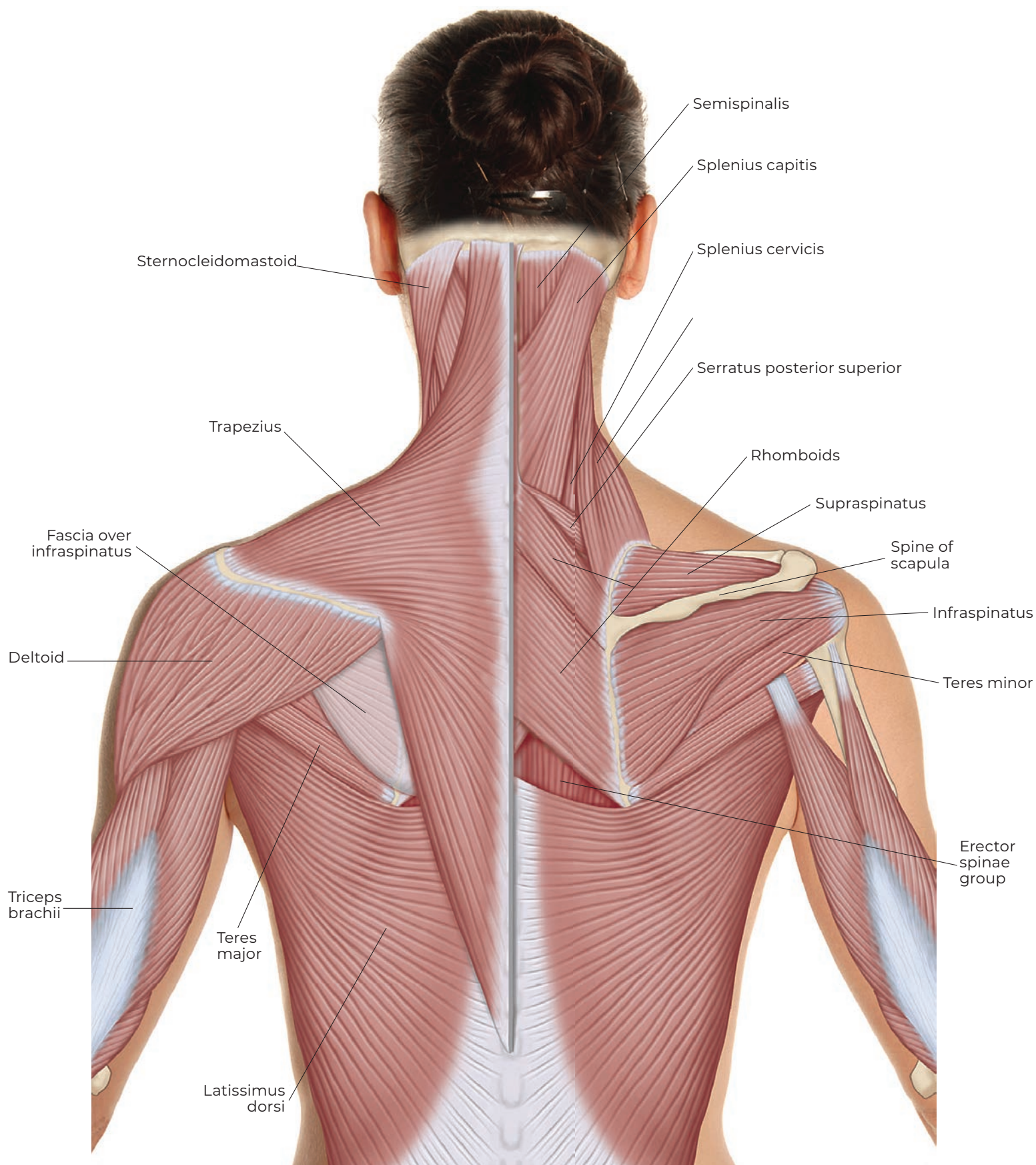
When a person presents with a small postural distortion pattern, I do not alarm them about all the horrible things that must inevitably befall them with the condition. I do not try to scare or convince them that they need long treatment programs because of the postural distortion pattern they have. Instead, I reassure them their condition is mild and need not impact their life. But . . . I do explain to them that if they do not take the healthful steps to improve their health, their condition *might* progress to the point that it will cause pain and/or dysfunction.

Again, biomechanics do matter. They must matter. Structure must inevitably affect function, at least in most cases. Like dominoes falling, if a condition like FHP is allowed to progress, the person will most likely experience some type of pain or dysfunction. And when it finally surfaces, it will likely be much harder to treat, and the prognosis for improvement will be diminished.

NEW STUDY

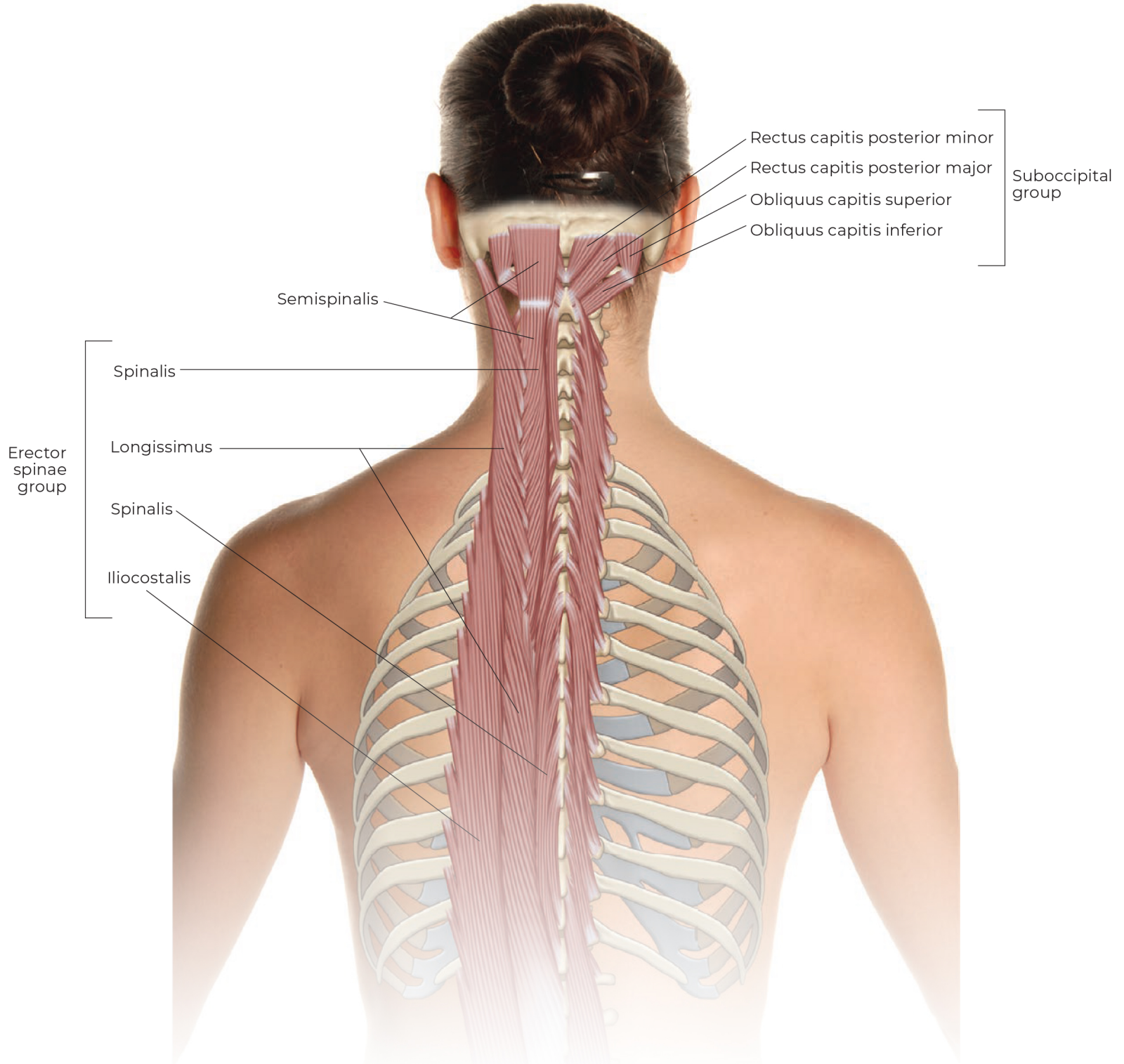
My motivation for writing this article is the release of a 2019 research study¹ that examines the correlation between FHP and neck pain. I feel this study, and its interpretation, are the perfect example of what is so wonderful and at the same time so frustrating to me about evidence-based research and its place in the clinical world of manual and movement therapy. Advocates who believe there is no correlation between postural distortion and pain have used this study to advance their ideology. So, let's explore this study.

A review of previously done studies (a metastudy) concluded that there is no correlation between the presence of FHP and neck pain. Hmm . . . this seems to back up the new negative ideology that there is no correlation between posture and pain. Isn't research wonderful?



2A

Cervicocranial extensor musculature: superficial and intermediate views. *Muscolino, Joseph E; The Muscular System Manual: The Skeletal Muscles of the Human Body, 4th edition. Elsevier, 2017.*



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