

The Perils of Perfect Posture, Part I

By Erik Dalton, PhD

Throughout history, human posture has been scrutinized for symbolic values ranging from socioeconomic status to psychological babble. In schools, teachers often reprimanded students to sit up straight.

Young girls innocently walked with books balanced perfectly on the top of their heads during "charm school" classes. Aesthetically, even the dancer has come to represent the epitome of graceful posture and balance, with the ethereal vision of the lithe ballerina artlessly stretching to the sky. Meanwhile, the rest of us may never forget the words of well-intentioned parents, "Now, stand up straight or people will think you have something to hide." Society's undying commitment to its tradition for proper postural codes remains alive today, in circles that not only envelop the military private, but also the young debutante in white.

But as we begin to casually observe the people around us, the question must arise: Is perfect posture really a reasonable goal for the average American living in a flexion-addicted society?

Clinical evidence overwhelmingly supports the fact that prolonged sitting or sleeping in flexed positions neurologically shortens and tightens the body's hip flexors, particularly the iliopsoas muscles. As the antagonist gluteus maximus muscles gradually become reciprocally inhibited and weak, a primary muscle imbalance pattern ensues. Could more harm fall upon someone in this condition? Simply put, yes. As he rises from his chair, the shortened iliopsoas and rectus femoris muscles drag the hips and lumbar spine forward. Thus, the unsettling "before" snapshot: A swayback posture and protruding belly ... paving the way to a disappointing first impression.

However, prolonged slumped sitting can also promote an even greater pain-generating problem. While slouching or leaning forward, such as when we tirelessly perform computer or couch potato work, our swayback curve gradually begins to reverse itself by overstretching the posterior low back ligaments and joint capsules. Gravity loudly demands its pound of flesh, and this newly formed "reversed lordosis" gets an

extra boost in its battle with the flexion-addicted swayback.

As we repeatedly stand, sit and slouch throughout a typical 8- to 10- hour workday, our low back curve is forced to repetitively translate anteriorly to posteriorly. The inevitable strain from local lumbar hypermobility soon begins to ravage the vulnerable sensory receptors in the body's joints, ligaments and intervertebral discs. Noxious afferent stimuli bombards the central nervous system causing the brain to react by triggering layers of muscle spasm to protect the unstable spine from further insult. Digging out the deep spasm and fascial contractures is usually a sad waste of time and energy unless the underlying joint dysfunction is first appropriately treated. Approaches to restore optimal posture and relieve chronic pain should include specific techniques designed to co-activate hyperactive sensory receptors such as mechanoreceptors, nociceptors and chemoreceptors in joints and ligaments, while activating muscle spindles to tonify inhibited weak tissues.

Ligaments, Muscles and Strain Patterns

While the overstretched ligaments valiantly strive to maintain spinal stability, the unrelenting force of gravity pounds the posterior facet joints and flattens the lumbar discs. The brain then begins its selective recruitment of specific muscles to provide ancillary support to the unstable spine. The problem worsens since contractile tissues designed to move bones are now required to work as spinal stabilizers. Sustained isometric muscular contraction neurologically weakens the lumbar myofascia due to the sudden influx of lactic acid and other toxic waste products. As the shortened tissue tugs unevenly on the spine, the joints' axis of rotation is altered. Predictable strain patterns and postural compensations reverberate throughout the thorax, neck and head. Forward head postures and slumped shoulders are two favorite dance partners of the pained swaybacks in this rapidly growing social circle of "flexaholics."

Postural muscles, such as the iliopsoas, quadratus lumborum, rectus femoris, and hamstrings, are structurally designed to resist fatigue in the presence of prolonged gravitational exposure. So why are distorted postures and chronic pain problems dominating our practices? The easy answer: overuse, underuse and just plain old abuse.

These three primary culprits create muscle imbalances that reduce the body's capacity to resist stress. As with everything in life, the body exists on a plane of give and take. Therefore, when postural muscles tighten, the antagonist groups are overstretched and weakened, allowing asymmetric patterns to develop. Soon the anti-gravity function of the body's myofascial system sends an alarm to deeper structures, such as

spinal ligaments, joint capsules and intervertebral discs, to brace for the overbearing compressional loads. The homeostatic threshold has been violated.

The body must now prepare to battle the devastating, self-perpetuating pain/spasm/pain cycle manual therapists confront each workday.

If considering the medley of countless occupations that require the typical 12-pound head to be held in a bent forward position, with arms positioned in front of the body, why is it any shock that neck, shoulder and arm pain run rampant in today's society? Consider the typical profiles of individuals fitting this definition. This endless list runs the gamut from dentists, car mechanics, stockbrokers, hairdressers, etc. - even bodyworkers.

Long hours of passive sitting at the computer, or leaning over therapy tables, create stretch weakness in the rhomboids and lower trapezius. This repetitive physical practice contributes to forward dragging of the shoulder girdle due to the pectorals propensity for domination. Tight latissimus dorsi and subscapularis muscles unite with the clavicular head of pectoralis major to internally rotate the humerus. With the scapulae protracted and the arms internally rotated, the neck reluctantly moves forward on the shoulders often forming the unattractive "dowager's hump". Unfortunately, as the spinal facet joints slide open, the cervical curve loses its lordosis and transforms to a typical straight cervical curve. To prevent the person from only looking at the ground, the brain recruits the suboccipitals and other capital extensor muscles to cock the head back into hyperextension. As the occiput hyperextends and slides forward on the atlas vertebra, the posterior occipital atlantal membrane is squashed along with local neural and vascular structures.

Sadly, tonic reflexes and dural attachments originating at the O-A joint dictate postural muscle tone throughout the entire trunk. Stubborn head, neck, brachial, and scapular pain refuses to leave when in an agitated state. These painful and chronic conditions frustratingly persevere until the therapist chooses to systematically balance the shoulder girdle on the rib cage, the neck on the shoulders, and the head on the neck.

To better understand the consequences of forward head postures and slumped shoulders, try these two experiments:

Exercise #1

- Assume a comfortable sitting or standing posture.
- Tuck the chin toward the chest. Allow the shoulders to come back into an ideal postural position.
- Slowly turn the head as far to the right and left as comfortably possible. Take notice of the available range of cervical motion.
- Assume the forward head posture. Rotate the head as far left and right as possible.

Most people experience a 25 percent to 50 percent decrease in range of motion while in the forward head position. This exercise helps illustrate the physical limitations of people suffering forward head postures and demonstrates the negative impact these sensitive neck structures must endure during normal activities, such as driving, shopping, dancing, etc., Spondylosis, degenerative disc disease and osteoporosis are but a few names that describe what physically transpires when this structural alignment problem is not corrected in a timely manner. The farther the head slides forward on the sagittal plane, the more devastating the long-term effects. The posterior longitudinal ligament likes to tear away from the discs and vertebral bodies from C4 to C6 causing internal pressure to fill the cracks with calcium or bone spurs (osteophytes) - the resounding reason why bone spurs originating from forward head postures have become the most common cause of chronic neck pain.

Exercise #2

- Assume a comfortable sitting or standing posture.
- Tuck the chin toward the chest. Allow the shoulders to come back into an ideal postural position.
- Close the eyes. Raise the arms from your sides as high as comfortably possible.
- In the same postural position, raise the arms to the front as high as possible.
- Assume a slumped shouldered/forward head posture. As in the first exercise, again raise your arms to your side and to the front as high as possible.

Both exercises lead to a compromising conclusion: Always begin upper-quadrant postural alignment by balancing the shoulder girdle on the rib cage, neck on the shoulders, and the head on the neck, **before** tackling specific extremity pain problems, such as supraspinatus tendonitis or thoracic outlet syndrome.

Supraspinatus tendonitis pain is generally the result of forward head postures and slumped shoulders ... not the cause. When the humerus internally rotates from a slumped posture, the supraspinatus attachment at the

greater tubercle of the humerus also rolls forward. Then when called upon to lift a heavy suitcase, the supraspinatus tendon cries for help as the shoulders are retracted. Pain shoots down the arm as the tendon flips back over the humeral head, and soon the fibers begin to tear.

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