

REHAB / RECOVERY / PHYSIOTHERAPY

The Chasm Between Posture and Chiropractic Education and Treatment

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Abnormalities of posture are common cause of pain and disability often overlooked by practitioners who treat patients suffering from acute and chronic musculoskeletal complaints.¹⁻⁵ Kendall states: "Postural faults that persist can give rise to discomfort, pain, or disability. The range of effect from discomfort to incapacitating disability is related to the severity and persistence of the faults."⁶

Believe it or not, in 1947, the American Academy of Orthopaedic Surgeons (AAOS) had a posture committee. According to Kendall, the AAOS definition of poor posture is ". . . a faulty relationship of the various parts of the body which produces increased strain on the supporting structures and in which there is less efficient balance of the body over its base of support."⁶

Addressing poor posture is an important issue, and it is typically neglected in chiropractic education and clinical practice. Do you remember the class you had in chiropractic college that was exclusively devoted to assessing and restoring normal posture? We don't.

Despite this lack of formal education, most DCs still acknowledge the importance of good posture, as did the AAOS in 1949 with this definition: "Good posture is that state of muscular and skeletal balance which protects the supporting structures of the body against injury or progressive deformity irrespective of the attitude (erect, lying, squatting, stooping) in which these structures are working or resting. Under such conditions the muscles will function most efficiently and the optimum positions are afforded for the thoracic and abdominal organs."

What Constitutes Good Posture?

To be able to recognize the attributes of bad posture, one must first have some standard of what

constitutes good or normal posture. Fortunately, many authors have discussed the importance of normal posture.^{1,4,5,7,8} Figure I demonstrates normal erect human posture under the conditions of static equilibrium. In the lateral view, normal postural alignment is defined as balance about a coronal line of reference or gravity line that passes through the external auditory meatus, acromioclavicular joints, greater trochanters and lateral malleoli. In the anteroposterior view, approximate skeletal symmetry allows division of the body into symmetrical halves with bisection of the following points: glabella; frenulum; episternal notch; xiphoid process; symphysis pubis; and a point midway between the medial malleoli of the ankle joints.

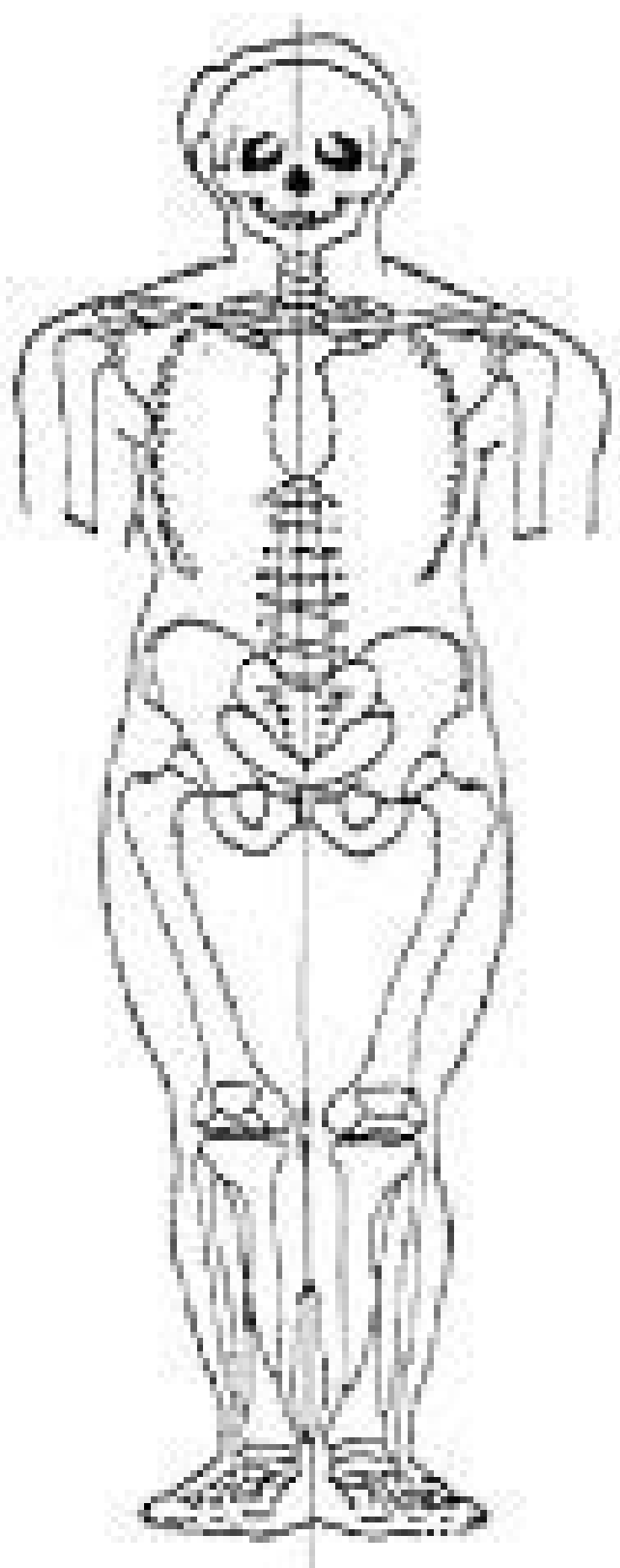
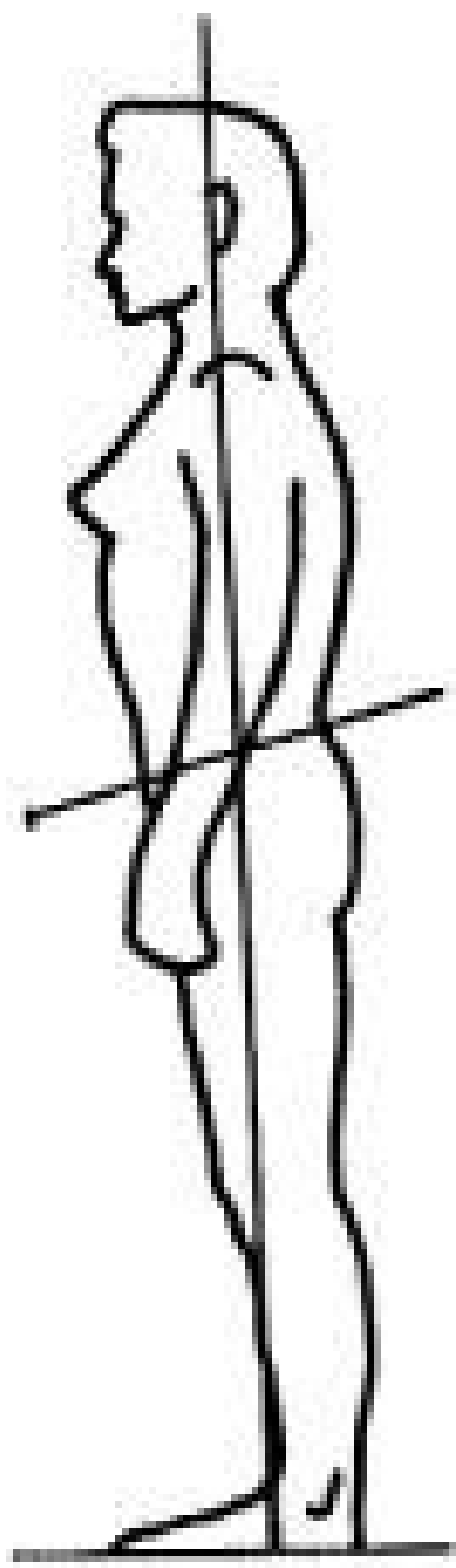


Figure I: The normal correct human posture.

Of course, radiographic examination may also be helpful in evaluating a patient's posture since the x-ray passes through the patient's three-dimensional posture and is captured as a two-dimensional artifact on the x-ray film. The focus of this article is introductory and general in nature. The complexities of correlating a patient's 3-D posture with their projected 2-D image is a topic of much importance that will be discussed in a later article. For now, let it suffice to say that deviation away from the general guidelines described here could be considered as alterations away from normal posture, the outcome of which can ultimately lead to the development of pain and dysfunction.

Some of the Physiological Effects of Altered Posture

Bad posture is a lifetime scenario for most people. Take, for example, the situation depicted in Figure II. World-renowned physiatrist Rene Cailliet, MD, has demonstrated that if the head weighs 10 pounds and is aligned with the external auditory meatus directly above the acromioclavicular joint, the effective load on the spinal tissues is 10 pounds. However, if the head is translated anterior, the weight exerted by the head is effectively increased by a factor of 10 with each additional inch of forward translation. That is to say, if the abnormal posture presented demonstrates two inches of forward head posture, the effective weight of the head to the supporting tissues is not 10 pounds, but 20 pounds; three inches of forward head posture results in an effective weight of 30 pounds, and so on. It is known that bone and soft tissue can suffer from such postural abnormality.



Figure II: Abnormal posture can have an adverse effect on spinal tissues.

Research has demonstrated that when loads are altered, bone remodels to accommodate the imposed demands.⁹ Imagine for a moment the shape of the cervical spine of the woman in Figure II. It is likely that her lower cervical spine would be hypolordotic; a situation that could lead to the development of osteophyte formation. Indeed, it has been shown that subjects with hypolordotic cervical spines have a greater incidence of osteophyte formation¹⁰ that is probably due to the imposed demands placed on the hard tissue.

The consequences of bad posture are potentially damaging for the soft tissues as well. Evidence exists that some postural positions can compromise neural tissue by changing blood flow to the spinal cord itself.¹¹ Flexed postures have also been associated with intervertebral disc damage.¹² Clinically, we have all observed changes in muscle tension and function in patients who sit for long periods in front of computer screens that have not been set up for maximum postural ergonomics. Sustained abnormal postures cause the muscles to contract isometrically, which leads to hypoxia and tissue damage. Remember that connective tissue also adapts to sustained changes in posture.

It is well-known that tendons, ligaments and discs display time- and history-dependent viscoelastic properties that reflect the complex interaction of collagen and the surrounding ground substances and proteins.¹³⁻¹⁸ When a significant load is applied to spinal tissues and sustained over time, the tissue experiences creep (deformation) and stress relaxation (a decline in internal stress over a period of time). In other words, connective tissues undergo plastic changes that can become permanent. This is probably why many individuals who exhibit the postural abnormalities of the patient in Figure II cannot be placed into proper postural alignment with either short-term active or passive methods.

Patients with uncorrected abnormal postures are left to potentially suffer a wide variety of unpleasant conditions: neurovascular entrapment syndromes, myofascial pain syndromes, chronic strains, and a wide variety of other nonspecific musculoskeletal pain syndromes.^{1-5,7,19-20} Brendon Reilly, MD, states: ". . . chronic postural disorders are probably the most common initiating or contributory cause of chronic back pain."⁵

What Should We Do about Bad Posture?

We should acknowledge that PTs, MDs and DCs all appreciate that poor posture is bad and good posture is, well, good. However, this observation by PTs, MDs and DCs is not really surprising, as parents untrained in spinal function also know that poor posture is detrimental. Moms and grandmothers are known for telling their slouching kids to "stand up straight."

What is our standard chiropractic approach for addressing poor posture? Unfortunately, there isn't one that is universally taught in our chiropractic educational institutions. For the most part, we do what grandmothers do, i.e., admonish patients to "stand up straight." Such awareness training is an important first step, but an inadequate approach by itself.

Can standard diversified adjusting, Activator adjusting, SOT adjusting, or similar adjustments correct longstanding postural imbalances? Unfortunately, there is little evidence to suggest that adjustments of any kind will substantially influence a patient's postural alignment. This leaves the chiropractic profession between the proverbial rock and a hard place. We know posture is an important factor in health, but we have no real effective tools in our standard chiropractic arsenal to address the problem.

In our next column, we will further discuss the attributes of normal upright resting posture and how to assess whether or not the subject under investigation has normal posture, and how to classify their abnormalities of posture. In future columns, we will investigate the works of chiropractic and medical innovators and their specific approaches to postural rehabilitation.

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