

# The Modern Day Neanderthal - Your Patient, the Office Worker

Joel Johnston, DC; Mark A. King, DC

Chiropractors are well equipped to address most neuromusculoskeletal problems patients bring them. However, most chiropractors see plenty of "noninjury" patients with neuromusculoskeletal complaints in their practices, that is, people with problems of unknown etiology. In today's society, jobs commonly consist of minimal physical activity and prolonged sedentary postures. This is, however, by no means less physically damaging over time than a traumatic injury, or less likely to create a symptomatic problem.

From an evolutionary perspective, humans are elite mammals. We are the only mammals capable of consistent bipedal locomotion.<sup>1</sup> This bipedalism is something we take for granted, but it can itself cause problems.<sup>2</sup>

Initially, humans needed to cover variable terrain and hunt for food, all the while avoiding becoming a meal for a creature higher on the food chain. This required strength, endurance, flexibility, coordination, and balance. Waddell suggests these should be the normal functions of the locomotor system in modern man as well.<sup>3</sup> It has been theorized that the need to avoid predators was the basis for the shift from quadrupedalism to bipedalism in the human.<sup>4</sup> Regardless of why, there is consistency in thought on how humans have converted to bipedalism.<sup>1,2,5</sup> The gluteus maximus muscle appears to play the key role in this conversion.<sup>1,2,5</sup>

The gluteus maximus is the largest skeletal muscle in the human body.<sup>6</sup> It plays a much less significant role in the locomotor system of the quadrupeds.<sup>1</sup> It is critical for upright posture and proper hip extension during gait.<sup>7,8</sup> In the human participating in a habitual seated posture, there is an approximation of the origin and insertion of the iliopsoas muscle. This creates shortening over time. This shortening over time will mechanically limit the hip extension capabilities of the gluteus maximus muscle, but it will also neurologically inhibit (via reciprocal inhibition) proper function and contraction of the gluteus maximus muscle.<sup>9</sup> Decreased hip extension has direct implications on posture, and particularly on gait.<sup>10</sup> It creates what Dananberg refers to as a global flexion response.<sup>10</sup> Anterior head carriage is a secondary result of a flexion-engaged torso.

The average human takes one million strides per limb per year.<sup>10</sup> Many conditions that a patient presents with in a chiropractic office could be a result of this postural problem, and subsequent gait abnormalities. It is not hard to imagine how even a subtle change in function can create an injury over time with this repetitive microtrauma.

Picture the gait of typical office workers after a normal day of prolonged sitting. As they stand, the iliopsoas fails to achieve full length, and when they begin to walk, hip extension is limited by mechanical and neurological constraints. This will shorten the stride, so that the person will walk

mostly with movement at the knees. Also, the forward slouched posture the person has maintained all day has put a passive tensile load on the latissimus dorsi muscles and created shortening of the pectoralis group. This can create internal rotation of the humerus and will manifest as posterior facing palms on posture and gait observation.<sup>11</sup> The global flexion of the torso also leads to the anterior head carriage mentioned earlier. This gait now somewhat mimics that of Neanderthals. Due to our quest for intellectual evolution, i.e., technological advancement, the locomotor system may be undergoing a regression in evolution.

Humans have successfully completed the quest to find more comfortable surroundings. There is no need for an elite locomotor system fully functioning to avoid a man-eating animal or to gather and hunt for food. Avoiding the I.R.S. and hunting in the back of the refrigerator for leftover pizza and the last of the six-pack hardly requires strength, endurance, flexibility, coordination, or balance.

A possible therapeutic intervention could include lengthening of shortened muscles, particularly the iliopsoas and pectoralis group, and other muscles shortened as a result of this habitual posture. Janda theorized that the inhibited muscles would recover automatically after stretching the shortened muscles.<sup>9</sup> However, some basic facilitation of the gluteus maximus and the lower scapular stabilizers would also help. A few good exercises to start with can be found in *Rehabilitation of the Spine* (pp 374, 380),<sup>9</sup> or chapter 25 of *Conservative Management of Cervical Spine Syndromes*.<sup>12</sup> Addressing areas of joint dysfunction is also critical in this scenario.

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*Joel Johnston,DC*  
*Oxford, Ohio*

*Mark A. King,DC*  
*Cincinnati, Ohio*

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