



THE POSTURE WINDOW

Using Posture to Guide Assessment and Treatment

By Yoni Whitten, DC

Posture offers us a window through which we are able to glimpse the inner workings of our clients' minds and bodies. When employed properly, this “postural window” allows us to better understand how to meet the specific needs of each client. Among other things, the postural window can direct us to which assessments and techniques are likely to yield the greatest benefit, which area of the body to begin with, and which areas to avoid—and enables us to explain the issues to our clients more effectively so as to engage them in their own healing/recovery.

How is it that the postural window can convey so much important information?

WHAT DOES FORM TELL US?

All living things relay important information about their health status via their form/position/structure. Take a common houseplant, for example. Imagine a plant that's getting plenty of sunlight, just the right amount of water, and has the perfect balance of nutrients in its soil. What would that plant look like? Now, take that same plant and stop giving it water and move it out of the sunlight and into the shade. How might the health and appearance of that plant change as a result of its new environment?

An even more vivid example comes from our experience with animals in captivity. Imagine going to a marine park, like SeaWorld. You're excited to get your first look at one of nature's biggest, most beautiful, and most intelligent mammals—the killer whale. When you finally come upon the whales, would it strike you as odd that the dorsal fins on many of the orcas are flopped over, hanging limply to the side? It would just look wrong, wouldn't it?

Well, it should, because this small change in the orca's posture offers a wealth of information regarding the animal's body and its health status, as well as a valuable window into its living conditions and environment.

A killer whale's dorsal fin is made up of dense connective tissue. When the orcas do what they do in the wild—swim across vast distances of open ocean—that tissue is strengthened and molded by the enormous pressure of the deep ocean. When there is no deep diving, no swimming across long distances, and most of the animal's time is spent at the surface in a small pool, the tissues of the dorsal fin weaken, atrophy, and fall over.

Experts in the field estimate that less than 1 percent of wild orcas have “fin collapse.” And yet, in captivity, nearly all orcas display some level of fin collapse.¹ The regular occurrence of fin collapse

in captivity has been attributed to limited space, time spent at the surface, pattern swimming, warmer water, dehydration, and lack of exercise. Among wild orcas, there was a documented case in 1989 where the fins of two male killer whales spontaneously collapsed after being exposed to oil from the Exxon Valdez spill. Fin collapse is thought to be a sign of poor health, as both whales died soon after the fin collapse was documented.²

These and other physical changes in posture also offer us an invaluable source of direct feedback from the organism as to whether a given therapy is moving it back toward health or further away from it. Take the wilting plant from our earlier example. What would happen if we gave it some water and moved it out of the shade and back into the sunlight? Its posture would let us know, within a relatively short time frame, that we had pushed the organism away from dysfunction and back toward health. We wouldn't be forced to guess what result we'd had or ask the plant how it felt. We would see it, and in recognizing what we see, we would have certainty. Wouldn't it be great to have that same kind of certainty with our clients?

POSTURE PROVIDES CLUES ABOUT FUNCTION

The good news is that these same types of changes in physical form occur in humans, too, and they can be used in a multitude of ways. These postural windows offer bodyworkers an amazing opportunity to view our clients' health status, as well as create customized treatment approaches for each of them. These windows can also be used as a compass of sorts to let us know when we're heading in the right direction.

Take forward-head posture (FHP), for example. Recently, this condition has gained a lot of media attention as “text neck.” It is now being called an epidemic, and nearly 60 percent of Americans are at risk of developing this problem.³ In fact, FHP has become so common that for many—including those of us in the health-care profession—it doesn't even register as abnormal when we see it.

But it makes sense, doesn't it? If the only killer whales you had ever seen were in captivity and they all had fin collapse, you would naturally assume all killer whales looked like that. It's not until you view the organism in its natural state that you truly get a sense for what “normal” looks like.

Form can tell us a lot about health, as in the case of “fin collapse,” which is prevalent with whales in captivity (right), but extremely rare in orcas found in the wild (below).

Just like the dorsal fin of a killer whale, human posture is supposed to have a distinct form. And, like an orca, in order to achieve and maintain that form, certain environmental stimuli must be present. In the absence of those stimuli, that form/shape will be altered. As with killer whales, the causes for deviations in the natural human form are often predictable, as are the results or symptoms of those deviations, provided you know what to look for.

FHP and text neck have become almost ubiquitous over the last 20–30 years. What was once only a problem for older people who had spent a lifetime reading and studying (it was once known as “Scholar’s Neck”) is now commonly seen in children. And like fin collapse or a wilting plant, the causes are all too apparent.

Working with our clients to identify the cause of their issues is a critical part of achieving a successful outcome in the long term. Only when the cause or contributing factors have been identified can we work to reduce and/or eliminate them, or, at the very least, come up with strategies to minimize the impact they’re having on the client’s condition. As important as this process is, it is only one part of what bodyworkers do. We also have to be able to use our physical techniques to improve the client’s health status to a level beyond what they are capable of doing on their own. To that end, it’s up to us to understand exactly what’s going on in the client’s body when we see changes in the natural form like FHP, the same way a marine biologist has to have an idea of what’s going on when they see an orca with its dorsal fin flopped over.

Form provides all kinds of clues about function. Let’s continue our look at FHP to illustrate this point.



Standing Postural Assessment Test

LOOKING AT FHP SPECIFICALLY

By far, the most common postural shift you'll see in general practice is FHP. As such, this is the logical starting point. The biggest problem with this type of shift is that as the head moves forward, it becomes functionally heavier. Specifically, the head gains 10 pounds of weight for every inch of forward translation.⁴ So, an average 12-pound human head carried 2 inches forward of normal would affect the body as if it weighed a whopping 32 pounds!

It's not that the head is getting larger—the muscles that are involved in supporting the head have to work much harder due to the abnormal angle of carriage at the joint.

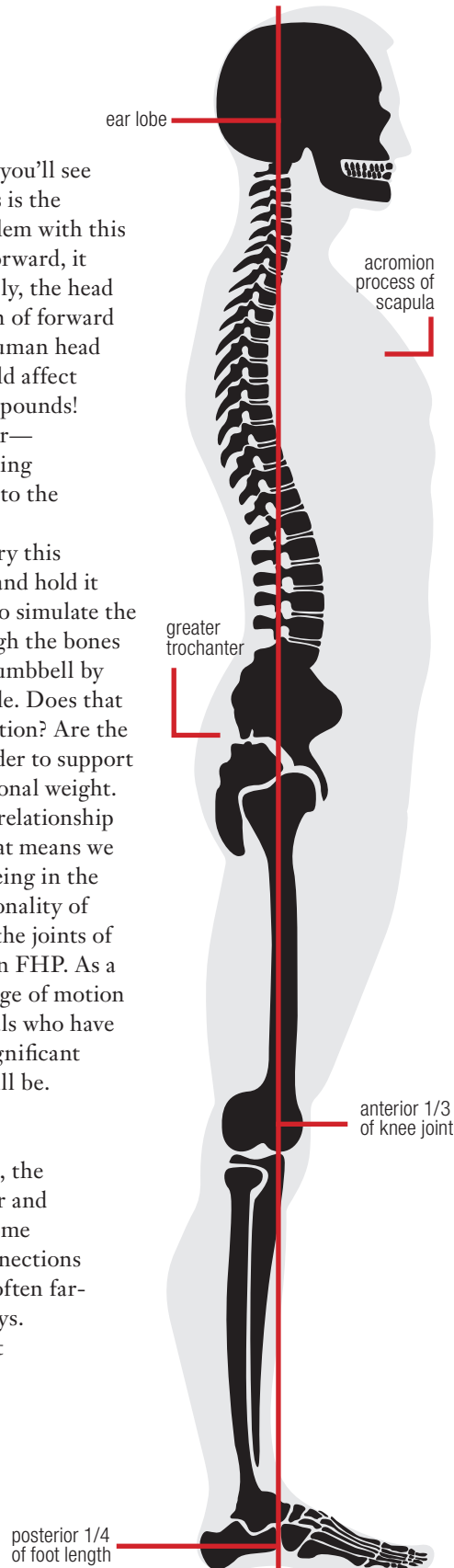
If this concept is difficult to grasp, try this exercise: Pick up a 10-pound dumbbell and hold it upright with your elbow in full flexion to simulate the weight of the head pushing down through the bones of the spinal column. Next, lower the dumbbell by extending the elbow to a 90-degree angle. Does that 10 pounds feel any different in that position? Are the muscles of your arm forced to work harder to support that weight at 90 degrees? That's functional weight.

Bodyworkers must always keep this relationship in mind: form will dictate function. That means we should be able to confirm what we're seeing in the postural window reflected in the functionality of our client. It should not be possible for the joints of the spine to move normally while held in FHP. As a rule, you will tend to find decreased range of motion and often pain with motion in individuals who have undergone postural shifts. The more significant the shift, the greater the dysfunction will be.

In addition to the increased load on surrounding structures and decreased functionality, as the head shifts forward, the length-tension relationships of muscular and fascial chains throughout the body become altered. Due to the widespread interconnections of these chains, the effects of FHP are often far-reaching and show up in unexpected ways.

Here are some of the conditions that have been associated with FHP:

- Arthritis
- Back pain
- Carpal tunnel syndrome
- Constipation
- Decreased lung capacity
- Decreased quality of life



- Depression
- Fatigue
- Headaches
- Heart disease
- Increased blood pressure
- Indigestion
- Neck pain
- Neurological problems
- Poor circulation
- Shortened life span
- Temporomandibular joint disorder

Text neck has the same type of effects on the body that FHP does. The functional weight of the head increases with increasing flexion of the neck, as when staring down at your phone. In this position, the functional weight of the head can increase to as much as 60 pounds. The massive increase in functional weight has significant and far-reaching effects on tissue quality, the length-tension relationships of muscles throughout the body, and overall functionality. Needless to say, these are issues that bodyworkers should address.

ASSESSMENT

A standing postural assessment (at left) is a gateway test. Every client you see should go through this before lying down on your treatment table.

According to author Elizabeth Kendall McCreary, normal body posture is said to exist when there is “a vertical line passing through the lobe of the ear, the seventh cervical vertebra, the acromion process, the greater trochanter, just anterior to the midline of the knee, and slightly anterior to the lateral malleolus.”²⁵

Following the postural assessment, we should have a basic idea of what our focus will be with this client. The picture will be clearer if we are able to correlate what we see with the information the client gives us in their history and with their primary complaint. Still, all we have at this point is an idea. Now, it's up to us to confirm our suspicions. Structure affects function, and if we can match up our functional testing with what we see structurally, then we have confirmation. If we are then able to correlate those findings with our palpation and relate that back to the client's history and/or symptomatology, we've got the perfect diagnostic storm.

Active Range of Motion Testing



There are three quick, surefire ways to confirm a suspected FHP:

1. Active Range of Motion Testing

- With the client standing, have them flex, extend, rotate, and laterally flex their neck.
- A normal spine in terms of shape and mobility will be able to achieve 50 degrees of flexion, 60 degrees of extension, 90 degrees of rotation, and 45 degrees of lateral flexion. Movements should be smooth, symmetrical, and pain-free.
- When FHP is present, we should expect to see a decrease in cervical range of motion. Often, pain is present and the client will hesitate as they approach their end range.

2. Lying Flat Test

- Have the client lie supine on the treatment table.
- A normal spine in terms of shape and mobility will allow the client to lie flat with the head and neck in a neutral position.
- When FHP is present, we should expect to see the head and neck collapse into hyperextension and the chin shoot upward because of compensatory rigidity in the thoracic spine.

3. Deep Neck Flexor Endurance Test

- Have the client lie supine on the treatment table.
- Place your hands underneath the base of their skull, supporting the weight of their head as you lift the head 1 inch off the table.
- Tuck the client's chin to achieve a neutral head position.
- Inform the client that you're going to slowly remove your hands and that they are to keep their head in this position, not allowing it to move.
- A normal spine in terms of shape, mobility, and strength should be able to hold the neutral position with the head off the table for 25–40 seconds.
- When FHP is present, we should expect to see the chin shoot upward again as the sternocleidomastoid and/or platysma take over for the mechanically disadvantaged deep neck flexors.

Once FHP has been confirmed, we will want to keep several key points in mind:

- First, explain to the client why they are having the pain/symptoms they are having and outline your plan for addressing their issues.
- Convey that something the client is doing, or not doing, is creating and/or contributing to their problem. We must work with the client to try to identify the causes and then provide ideas and strategies to reduce or eliminate those suspected causes.

- Understand that head position drives body position—"Where the head goes, the body will follow." Because of this, the head is often the best place to begin therapy. So, by reducing FHP, we will inevitably help restore normal length-tension relationships of soft tissue throughout the body.
- Perform all in-office work and make all recommendations while working within the pattern that's in place. Make certain we are not reducing the tension, weakening and limiting the client's ability to stabilize their body.

Lying Flat Test (positive for FHP)



Deep Neck Flexor Endurance Test (initial setup position)



THE THERAPEUTIC SANDWICH A valuable tool is to dedicate a small portion of the client's session to the instruction and proper performance of therapeutic exercises. By involving the client in their own recovery, we can increase their awareness, empower them, and improve our results. This is something I like to call "therapeutic sandwiching," and it leads to the creation of a very potent environment from which to effect lasting change.

With the therapeutic sandwich, the top layer is the identification and subsequent reduction or removal of the causal factors.

The meat of the sandwich is made up of the various in-office techniques employed by the bodyworker. Just like a real sandwich, this is the part that determines, more than anything, whether the sandwich tastes good, or, in our case, the results we get.

The bottom layer that completes the sandwich is made up of the specific therapeutic exercises and lifestyle modification strategies we share with our clients to get them to focus and work on between office visits.

Using the therapeutic sandwich makes practice a lot more fun, because instead of being solely responsible for the client's health, both therapist and client form a team, and together work toward achieving a common goal. Furthermore, by giving the client an active role in their healing process, we empower and motivate them and because of that, the client's results come quicker and are long-lasting or permanent. The benefit for bodyworkers is not only better clinical outcomes, but the removal of a tremendous amount of stress generated by trying to undo in an hour what the client has been actively creating for weeks, months, or years. All these elements combine to make practice more fun. When you're educating clients, having fun, and getting great results, it's a daily reminder for why we got into this amazing profession in the first place—to help people and make a difference.

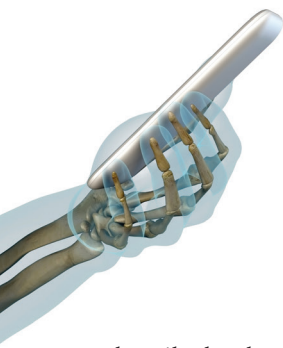


WHAT IS THE PATTERN?

Vladimir Janda, a physiotherapist from Czechoslovakia and the man who first identified and defined upper- and lower-crossed syndromes, gave us a wealth of information on movement patterns and the quality of movement. He also discovered that muscle imbalances in the body are not localized; they're systemic phenomena that involve the whole body. They are also predictable.

Does FHP have a predictable pattern? Thankfully, the answer is yes. We already know that as the head moves forward, it increases in functional weight. We also recognize that this increase in weight means that muscles involved in supporting the head are forced to work harder to meet the increased demand being placed on them. Over time, these muscles will adapt to the increase in demand by increasing the resting tension and hypertrophying (exactly the same way a weightlifter's muscles respond to increased demand).

One of the most obvious clues for bodyworkers to key in on is hypertrophy of the upper trapezius muscles. It's a dead giveaway when a small-framed person, who's probably never lifted a weight in their life, comes into your office with



heavily developed traps and complains of neck or upper-back pain that tends to be worse in the afternoon or evening and diminishes when they lie down at night. Very likely, this individual's tremendous trap development is the result of carrying around a head in FHP for years or decades. Upon palpation, you will detect increased overall tension, multiple "ropy" bands or "gristle," and trigger points with the muscle itself, as well as sensitivity to touch—even light touch will often elicit tenderness.

Moving down the kinetic chain from the head and neck, we arrive at the thoracic spine. When a client's head has been pulled into FHP, their body's response is to increase the curvature of the thoracic spine. This bowing or *hyperkyphosis* of the spine in the opposite direction of the head translation is the body's attempt to counterbalance the significant increase in weight from the head being carried forward of its normal position. As with the alteration of the normal curvature in the neck, the increased curvature of the thoracic spine has significant consequences. As the upper back flexes to accommodate the weight increase at the head, the scapulae become disassociated from the spine, abduct from the midline, and move forward into a protracted position.

This skeletal movement influences the surrounding muscle and connective tissue in one of two ways. Muscles will either be (1) lengthened, thus placing them at a mechanical disadvantage for their action, which eventually leads to weakening, or (2) shortened, thus giving them a mechanical advantage in their action, leading to increased tension and predisposing them to chronic-strain injuries. Although there are two paths, the end result of both is the same—chronic overload, reduced functionality, and pain.

The upper cervical extensors will shorten and ramp up tension in response to the head's increase in weight to allow the eyes to remain fixed on the horizon. The upper neck will hyperextend, thereby lengthening the deep neck flexors and placing them at a mechanical disadvantage, which further diminishes the body's ability to resist gravity and allows the head to slip further into FHP.

The scapular retractors will be pulled apart and weakened as the thoracic spine increases its kyphosis to attempt to counterbalance the increased weight of the head. Muscles of the chest, anterior shoulder, and arm will increase their tension as they become mechanically advantaged as a result of the decrease in their resting length.

Moving further down the kinetic chain, the lumbar spine tends to hyperextend, contributing to an anterior pelvic tilt. The lumbar spine erectors and hip flexors become short and tight and the abdominals and glutes are pulled into lengthened positions and weakened—this is a classic example of Janda's lower-crossed syndrome.

ADDRESSING DYSFUNCTION

As a general rule, bodyworkers should avoid any techniques that lengthen, relax, or decrease the resting tension in muscle groups that have become mechanically disadvantaged as a result of the client's

posture. Instead, techniques designed to lengthen and reduce the resting tone should be reserved for mechanically advantaged areas. For areas of the body that have increased their resting length, we would want to use closing techniques to help the body gain mechanical advantage, as well as adjunctive therapies designed to increase neurological activation and increase muscle tone, with the understanding that with enough time and repetition, the client can slow or even reverse the lengthening process taking place in those areas. **m&b**

Notes

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2. Jennifer Kennedy, ThoughtCo., "Killer Whale Dorsal Fin Collapse," accessed July 2017, www.thoughtco.com/killer-whale-dorsal-fin-collapse-2291880.
3. Lindsey Bever, "'Text Neck' is Becoming an 'Epidemic' and Could Wreck Your Spine," *The Washington Post*, November 20, 2014, accessed July 2017, www.washingtonpost.com/news/morning-mix/wp/2014/11/20/text-neck-is-becoming-an-epidemic-and-could-wreck-your-spine/?utm_term=.1b58302e2506.
4. A. I. Kapandji, *The Physiology of the Joints*: Vol. 3, 6th ed. (Churchill Livingstone, 2008).
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