

Think Outside the Box and the Spine (Part 1)

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Over the years, understanding and treating [the extremities](#) has moved to the forefront of my practice. Integrating extremity analysis and adjusting into your patient protocols can make you a more skilled practitioner. It gives you the confidence in knowing and understanding how the entire body can and does affect spinal stability.

Since the prevalence and presence of extremity involvement can be frequently overlooked and ignored, I am beginning a series of articles dedicated to discussing them clinically. I will be covering the feet, ankles, knees, hips, hands/wrists and elbows to the shoulders, starting with the feet and working our way up.

It has been my experience that - more than any other part of the body - the feet are overlooked on a regular basis. Part of this is because there is not a lot of training in school on how important the feet are. Another factor is that most patients look to podiatrists or orthopedists as feet experts and never think that chiropractors take care of these areas. This thinking trickles down to a lot of us chiropractors in the field as well. The general public pegs us as being "neck and back doctors," and it's easy for us to get trapped into thinking this way. There is nothing wrong with being "back and neck doctors," but why not add more to your patient care?

The fact that [the foot](#) affects the rest of the body is common knowledge, but it is important to look at *why* and *how* it affects the body. Let's break this down clinically. Any structural imbalance requires compensating movements in the lower extremities and pelvis, in order to minimize as much as possible stresses and strains that would affect the spinal column. Over time, however, specific muscle imbalances and shortenings will develop. Eventually, the soft tissues and bones are damaged by microtrauma, which can eventually lead to pain and discomfort.¹

Arch Issues

The foot has three arches (medial longitudinal, lateral longitudinal, and transverse or metatarsal) which are supposed to be working together to support the 26 bones of each foot. The stability of the [tibia](#), [fibula](#), femur, hips, pelvis and spine are all dependent on these three foot arches. Well-supported arches mean that biomechanics are healthy and stress is reduced throughout the axial kinematic chain going from the feet all the way up to the head.

When one or more of the arches aren't working, we start to see problems. Arches that are unsupported or supported improperly will generally result in one of two outcomes: overpronation or oversupination. Classic supinators tend to put tremendous pressure on the lateral longitudinal and transverse arches of their feet. These are the people who truly do have a high instep or a high medial longitudinal arch when weight-bearing. As interesting as it is to find someone like this, don't expect to find them that often. I find that only 3-5 percent of my patient population is true supinators.

It is more common to find excessive pronators. These patients have the collapse of all three of the arches; their feet are often wider and longer as a result. I find the prevalence of these types of patients is in the 80-90 percent range. Because they will walk in your door more frequently, let's become more familiar with how to evaluate their foot issues.

The Navicular Drop Test

Research supports a method of objectively documenting the presence (or absence) of collapse of the medial longitudinal arch.² The measurement procedure uses a test method originally proposed by Brody.³ This procedure requires some practice,⁴ but has even been used in a recent research investigation involving athletes with [ACL ruptures](#).⁵

To perform the navicular drop test, the only pieces of equipment needed are a pen and a 3" x 5" index card. With the patient sitting comfortably (feet on the floor, but non-weight-bearing), palpate the medial aspect of each foot and find the navicular prominence (the most prominent bony landmark found inferior and somewhat anterior to the medial malleolus). Using the pen, make a mark on the patient's skin at the point of the navicular prominence. Stand the card on the floor next to the medial arch of the foot and mark the card at the level of the navicular prominence.

Next, ask the patient to stand, in a relaxed position. Once the arch is weight-bearing, the navicular prominence will be somewhat lower. Make a second mark on the same side of the card at the new level of the navicular prominence. Repeat this procedure with the other foot. Now measure the difference between the two marks for each foot. If there is a drop of 4 mm or more in the arch between sitting and standing, or if there is an obvious asymmetry from left to right, this is objective evidence of a functional foot problem - hyperpronation/collapse of the medial arch.⁶

When the arches of the feet fall or flatten into excessive foot pronation, the foot physically drops downward toward the floor. As the foot drops, the ankle becomes stressed in the medial portion. This creates excessive medial rotation of the tibia and femur. This inward rotation of the leg bones creates a lateral pulling on the greater trochanter of the femur as well. Following the chain of events upward, the pelvis torques backward, which creates stress to the lumbar spine and upward to the thoracic, cervical and skull areas.

Quite often, patients present without any pain in their feet at all. The pain actually presents itself higher up in the axial kinematic chain. It might only be knee pain, hip pain or back pain. The key is to realize that the feet are the gateways to the rest of the body. A lack of support in one or both feet will have negative effects on the body over time.

Think Outside the Box and Outside the Spine

Practice has taught us well to listen to what our patients are telling us. In fact, this is one of the greatest strengths of our profession: we listen. I am encouraging you to listen with a very open mind whenever you are thinking outside of the box and the spine.

Let's take, for example, a typical patient who comes to you with a lower back complaint. This patient truly has pain and other clinical findings in the lower back. It is very easy to focus on what is happening at that specific area and figure out how to treat it accordingly. We are good at treating the lower back, and each of us has protocols in place to do this. But what if the problem is not actually the

lower back? What if the symptoms are there, but the *problem* is actually originating from somewhere else?

I am asking you to let your mind address the pain they are describing to you, but do not confine your evaluation and treatment to that specific area. Would it interest you to know that 85-90 percent of patients who come to me for lower back pain actually have problems that originate in their feet? It is an extremely powerful patient-education tool to be able to check patients' feet, identify any arch problems, and give them the tools to help reduce and alleviate their pain. [Plantar fasciitis](#), Morton's neuroma, metatarsalgia, heel spurs/pain, hallux valgus and hammer toes are some of the major conditions you can be known for being able to help.

Addressing Arch Problems: Key Practice Recommendations

Stabilizing orthotics: I always recommend custom-made, stabilizing orthotics for my patients because they help promote healthy biomechanics, neurology and circulation for the feet. I often have patients bring in old orthotics they have or are currently wearing so I can check them and see how they are working. A good pair of stabilizing orthotics will change people's lives and allow them to do activities they enjoy and enhance their quality of life.

Foot exercises:

Rolling exercises: Using a foot roller, tennis ball, golf ball or firm rubber ball, have the patient stand and put pressure under the various parts of the foot. This helps stretch the tight plantar fascia and intrinsic foot muscles.

Calf stretch: Have the patient place their forefoot on a step and gently lower the heel until they feel a gentle pull in the calf. The patient should not apply too much body-weight; it should be very gradual and comfortable for the patient.

Towel scrunch: Throw a towel on the floor and have the patient grasp or bunch the towel under the feet by scrunching or flexing the toes. This actually helps with forefoot range of motion as well as strengthening of the intrinsic foot muscles.

Tubing exercises: Wrap the surgical tubing or [elastic bands](#) around the forefoot and make sure they cover dorsiflexion, plantarflexion, inversion and eversion. I have my patients do these exercises for one minute in each direction, two times per day. I have them vary the speeds from slow during the first week or two and then faster by the third week. The exercises are quick, so patients don't complain about doing them as much.

Supportive shoes. I could write an entire other article about footwear, because this is one that patients tend to overlook, and it can have a significant impact on their pedal foundation. I suggest you have them remove their shoes so you can examine them; bend each shoe in various directions and see how supportive it is. Be sure to explain to patients why their shoes affect their foundation and therefore their entire kinetic chain. Being properly supported can help their feet, knees, hips, back and neck.

I have enjoyed developing a practice specialty in dealing with patients' feet. It is amazing how people appreciate being taught about how important the feet are to health. I also marvel at how many patients say, "I have always thought that my feet were involved, but no one has ever acknowledged them before." Take the time to look at your patients' feet. They will thank you for thinking outside the

spine.

References

1. Cichoke A, Yochum T, Howell T. "[Posture and Weightbearing Biomechanics](#): Unproved Theory or Clinically Important Concept?" *Dynamic Chiropractic*, July 29, 1996.
2. Gould N. Evaluation of hyperpronation and pes planus in adults. *Clin Orthop*, 1983;181:37-45.
3. Brody D. Techniques in the evaluation and treatment of the injured runner. *Orthop Clin North Am*, 1982;13:541-548.
4. Picciano AM, et al. Reliability of open and closed kinetic chain subtalar neutral positions and navicular drop test. *J Orth Sports Phys Ther*, 1993;18:553-558.
5. Beckett ME, et al. Incidence of hyperpronation in the ACL injured knee: a clinical perspective. *J Athl Train*, 1992;27:58-62.
6. Charrette M. "[Screen Your Patients to Determine Orthotic Need](#)." *Dynamic Chiropractic*, July 29, 2002.

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