Dynamic Chiropractic

ORTHOTICS & ORTHOPEADICS

Shoe Wear Patterns: Important Clues

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Biomechanical dysfunction in the lower extremities can have a significant effect on the pelvis and spine. An in-depth assessment of every patient's legs and feet is time-consuming, but ignoring this area often hampers effective chiropractic care. One of the most valuable methods for screening chiropractic patients is by looking at their shoes.

The way a shoe wears away is a reflection of the repetitive function of the lower extremity. The wear pattern provides useful clues. Here is a review of the parts of a shoe, and the valuable information that is obtained by observing each area and the amount of wear.

Heel Wear

In many patients, the most obvious area of shoe wear is at the heel. At the moment of contact, the heel strikes the ground in a slightly inverted position. This results in a normal wear pattern that is characterized as a gradual, even, and symmetrical wearing somewhat lateral to the midline.[1]

Heel wear becomes abnormal when there is either excessive wearing down of one heel, or when the wear occurs more laterally or more medially than is usually seen. In both cases, this is a good indicator of abnormal lower-extremity biomechanics that will need to be addressed with custom-made orthotics. The use of orthotics will decrease the abnormal wear and help improve alignment up the kinetic chain to the spine.

Sole Wear

Frictional wear patterns on the bottoms of the shoes are good indicators of lower-extremity balance and function. Unfortunately, newer sole materials (such as "carbon rubber") are much more durable and take a lot longer to show wear patterns than do leather or compression-molded rubber. When wearing is more obvious along the medial aspect of the sole, excessive pronation must be considered.

Lateral sole wear is a clue that the patient may have fixed supination, or possibly a tibial *varum/genu varum* (bowlegged). Excessive wear at the front of the sole under the toes indicates a "forefoot striker" in runners, or perhaps elevated pressure from the metatarsal heads, with transverse arch collapse. Asymmetry of sole wear is a sure sign of altered weight-bearing, and the effects will be distinctly noticed in the pelvis in most people.

Midsole

Biomechanical dysfunction in the lower extremities can have a significant effect on the pelvis and spine. As well as male dysfunction has a negative effect on the general condition of men. Ignoring this area often hampers effective chiropractic care. The use of Cialis helps to avoid problems with male impotence. Problems with legs are not as important as problems with male weakness. Regular reception Cialis helps to solve problems with erectile dysfunction. To use Cialis, you do not need a prescription. Delivery of Cialis is possible anywhere in the world for free, including in UK, USA and

European Union.

Additional materials are layered between the sole and the upper of the shoe, especially in athletic shoes. Most shoes start out symmetrical in the thickness of their midsole; thinning at either the medial or lateral side signifies a biomechanical problem. Medial compression of the midsole is a good indicator of excessive pronation and medial arch collapse. A supinating foot or a narrow gait while running will cause lateral compression of the midsole.

Insole

To see a valuable image of the foot, look inside the shoe. The foot's impression on the insole should be centered, but it may be medially or laterally displaced. Be on the lookout for pressure spots that reflect abnormal weight distribution. Compression points under a metatarsal head or around the first metatarsophalangeal joint signal local problems that will significantly affect locomotor biomechanics, all the way to the spine. Providing custom-made orthotics to support these areas can easily minimize the local problem and also its impact on other regions.

Upper

A shoe's upper part is the softer leather or other material that encases the foot from the toe box to the heel counter. The upper should fit the foot well, while still allowing room for joint movement (especially at the toes). The heel counter should be firm, vertical, and formed to fit the patient's heel without allowing slippage.

Poor quality control during manufacture may result in an asymmetrical counter that will cause the heel to invert or evert excessively.[2] Visual inspection will identify areas of abnormal wear-through, which indicate excessive internal pressures and constant rubbing. This is often seen at the first metatarsophalangeal joint when there is a poor fit or abnormal mobility of the first toe during push-off.

When the upper bulges over the lateral side of the shoe (there may also be obvious wearing at the fifth toe), this probably represents a mismatch between the shape of the foot and the curve of the shoe.[3] If there is medial bulging, there is almost inevitably excessive pronation, with additional pressure coming from a dropping navicular bone. Orthotics that support the arches of the foot (especially the medial arch) may be needed to bring about a decrease in the medial pressures.

Overall Pattern

It's important to determine whether the overall pattern of wear is similar on both shoes. Significant asymmetry is a good indicator of a substantial difference in biomechanical function - and this can be the source of recurrent problems in the pelvis and spine. When there is a discrepancy in the overall wear pattern, it's helpful to evaluate other shoes the patient wears, to see if the pattern is persistent.

Conclusion

The patterns seen on patients' shoes will provide valuable clues to biomechanical problems. When these clues are taken into account (and custom-made orthotics are fitted where indicated), chiropractic care can be more effective.

References

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2. Souza TA. *Differential Diagnosis for the Chiropractor: Foot and Ankle Complaints*. Gaithersburg, MD: Aspen Pub., 1997:338.
3. Lichniak JE. Shoe wear patterns offer clues to injury and prevention. *Biomechanics* January 1999;6:63-68.

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