

Orthotic Support for the Unlevel Pelvis

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Evaluation and correction of the pelvis is a very important part of chiropractic care. However, there are several variables affecting pelvic structural support which can interfere with chiropractic corrections. If these variables are allowed to persist, the patient will not be able to achieve maximal response to adjustments and will become chronic. Pelvic function during daily activities is due primarily to two major joints - the sacroiliac (SI) joints. These are the joints we need to adjust and stabilize.

SI Function and Movement

The main function of the sacroiliac joints is to support the vertebral column and transmit motion and weight-bearing between the spine/pelvis and the lower extremities. A small amount of movement occurs in these joints in spite of their irregular surfaces and very strong anterior, interosseous and posterior ligaments.¹

In the fifth decade of life, fibrosis begins to take place between the cartilage surfaces, reducing mobility.² True bony ankylosis is a rare phenomenon late in life.³ No muscles cross the sacroiliac joints, but the gluteus maximus, piriformis, and long head of the biceps femoris muscles attach into the sacrotuberous ligament, and may influence joint movement and stability.⁴

Most of the important work of the sacroiliac joint occurs during gait. The ground reaction forces generated during gait result in two specific phenomena:

- Because of the irregular contour of the joint surfaces, sacroiliac movement occurs only when there is enough force to overcome ligamentous resistance. This is thought to constitute a shock-absorbing mechanism.⁵
- When there is a difference in leg lengths, the increased ground reaction force from the longer leg will cause the ipsilateral ilium to rotate more posteriorly.⁶ The higher forces and repetitive subluxation of the sacroiliac joint may be the underlying cause of the increased frequency of low back pain seen in patients with a leg-length discrepancy.

The Unlevel Pelvis

Some patients have a difference in the anatomical components of the lower extremities that results in an unlevelled pelvis. However, the most frequent cause of pelvic unleveling is loss of support from the lower extremity - and the foot, in particular - due to collapse of the medial longitudinal arch. This is classified as a functional imbalance. When the foot arch drops (excessive pronation), the leg rotates medially and the femur head drops, causing an unlevelled pelvis. Excessive pronation may occur from a young age through lack of development of the arch, but most commonly occurs in later years, when

the ligaments that support the arches undergo plastic deformation.

Since this process usually happens gradually, there is often no significant foot pain. The patient with this condition often begins to develop chronic low back and pelvic problems, but doesn't describe any foot symptoms. Therefore, chiropractors should perform a lower-extremity postural examination for most new patients.

A pelvic tilt, a lower sacral base and a femur head discrepancy all indicate a lower extremity source, but not whether it is an anatomical or a functional short leg. There is no reliable information on the radiographs to differentiate these conditions. The clinical postural exam with the lower-extremity screening is the only way to make this determination.

If there is any doubt, the safest initial approach is to fit the patient with custom-made stabilizing orthotics. If there is a persisting pelvic tilt after wearing the orthotics for several weeks and receiving chiropractic adjustments, a heel lift can then easily be added to the orthotic for complete correction.

Orthotic Support

Since the pelvis and sacroiliac joints are so intimately involved in gait, it's not surprising that orthotic support for the feet is often a necessary treatment component. Orthotic support for low arches and calcaneal eversion will reduce pronation, which decreases the medial rotational stress on the sacroiliac joints. In addition, orthotic correction of a functional or an anatomical leg-length discrepancy will diminish the ground reaction forces being sent through the joint on the side of the longer leg. And finally, shock-absorbing materials in the orthotic can diminish heel-strike shock. The additional padding is particularly necessary whenever there is instability, degeneration, or even an inflammatory arthritis in the sacroiliac joints.

Support With Every Step

Once a pelvic subluxation has been found, effective treatment can be planned. The first step is to evaluate the gait cycle to determine if there is any lack of support from the lower extremities. This may require accurate standing radiographs taken without projectional distortion. After that, a determination of anatomical asymmetry or functional imbalance will help to guide chiropractic care.

In many cases, orthotic support for foot pronation, knee rotation or femur angulation will be needed. Additional shock absorption can help to decrease symptoms due to degenerating joints and spinal discs. Those few patients with a true anatomical leg-length discrepancy will also need to be supplied with the appropriate amount of lift.

The additional time required to determine the source of the pelvic subluxation will be repaid in more effective chiropractic care and adjustments that last. The use of custom-made stabilizing orthotics will often complement and improve the chiropractic adjustment while assisting the body to return to an improved state of function and health.

References:

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