Dynamic Chiropractic

ORTHOTICS & ORTHOPEADICS

How the Feet Contribute to Postural Distortions

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The human body is a complex organism with great demands placed upon its musculoskeletal system. Postural imbalances often occur as a result of problems in the feet and lower extremities. Such imbalances and misalignments can cause postural distortions by placing unnecessary stress on other parts of the body, yet can often be effectively managed if the problems are identified early and appropriate treatment follows.

Posture Is Important

As bipedal creatures, humans rely on proper posture to support the body. Maintaining this balance helps prevent a breakdown of the structure, which can eventually lead to pain in the ligaments; tendons; muscle fibers; cartilage; and bones. Many painful disabling conditions of the soft tissues of the musculoskeletal system are directly or indirectly related to posture in standing; walking; moving; lying; sitting; bending; or lifting.[1] Therefore, proper posture is essential in preventing these disabling conditions.

Causes of Postural Distortions

Proper balance and coordination between movements of the lower extremities and the pelvic and spinal areas are essential for postural stabilization. Postural faults can arise from injury, illness, or imbalance in the pedal region. In recent years, posture has also been greatly affected by a population with a sedentary lifestyle. More often than not, problems of the feet are the underlying cause of postural problems of the spinal, pelvic, torso, and cervical areas of the body. Excessive pronation or leg length inequality affect gait. In turn, these can produce postural defects.

Pronation. Patients with excessive or prolonged pronation put undue stress on the body. Excessive pronation causes an abnormal instability in the weightbearing mode, creating hypermobility in the foot joints and leading to microtrauma in the soft tissues.[2] This increased rotation is forced upon the leg, pelvis, and especially the sacroiliac joint. With each step, gait is affected. An unbalanced gait affects body balance, stability, and eventually posture.

To determine if patients are pronating, look at their gait and posture. Do they toe-out? Do they present with low medial arches? Are the patient's shoes worn along the lateral border of the heel? If so, this hyperpronation may be an underlying cause of postural distortions.

Leg Length Inequality (LLI). Leg length inequality is another factor in postural instability. Patients presenting with low back pain or pain in the hips often have a low femur head height, low sacral base, or low iliac crest height. Anatomical causes, such as unequal growth rates; trauma; congenital deformities; degeneration; infection; and neoplasms may contribute to LLI. There are two types of LLI that may be observed. Structural LLI is a true difference in the length of the legs, perhaps due to

unequal growth rates, fractures, deformities, or altered joint structure. Functional LLI results from excessive foot pronation (flat feet), muscle contractures or pelvic distortions. Functional LLI is more common, yet difficult to spot without extensive clinical evaluation.

Determining LLI can be achieved by visual or radiographic procedures. Standing anterior-posterior (A-P) pelvis or standing A-P lumbopelvic radiographic views are preferred. If the patient presents with a functional short leg or pelvic unleveling, he or she should also be checked for excessive supination or pronation.

Postural Analysis

Evaluating a patient's posture is the first step in determining whether postural distortions are occurring. Important information can often be obtained through a simple evaluation of the standing posture. Assessing the frontal and sagittal planes of the balances, alignment of the three major regional masses of the body (cervical, torso, pelvis), and their relationship to their base of support - the feet and the legs - is important. Using a commercially available plumb-line device is a useful assessment tool. While every patient's case is unique, a postural analysis should be part of the patient's initial examination. X-rays may also be required to determine further postural defects.

Treatment Options

In addition to any chiropractic adjustments, patients may improve their posture by performing an at-home rehabilitation exercise therapy program, and by wearing orthotics to help stabilize the spine and pelvis.

Exercises. Correcting joint and muscle dysfunction will help strengthen the body and minimize the potential for future injury. Posture-specific, asymmetric exercise maneuvers against resistance are helpful.[3] The result is stretching shortened connective tissues while strengthening and retraining imbalanced spinal support muscles.

It is important that patients develop and maintain active lifestyles through exercise. Exercising three days a week for a minimum of half an hour will help patients keep their bodies in motion and assist in weight management - an important factor in keeping feet in line. Swimming, walking, and other low-impact exercise programs should be prescribed to the patient.

Orthotic Support. Restoring balance, and essentially posture, can effectively be achieved through the use of flexible, custom-made orthotics. Spinal stresses from a pelvic tilt can irritate nerve roots in the spine. Proper orthotics can restore balance in the foundation of the body and relieve the pain caused by poor body mechanics. If the patient's pelvis tilts forward (causing postural defects), spinal stabilizers can shift and align the pelvis back into its normal, balanced position. For patients with excessive pronation, supporting the feet will aid in the natural balancing and stabilization of the pelvis. These orthotics should be custom-made for each patient. Generic, off-the-shelf orthotics are not designed to help keep feet in their proper structural positions, absorb heel-strike shock, or help the doctor's adjustments "hold" better and longer. Custom-made orthotics help support the foot's natural posture; absorb shock; "run cool"; and are lighter in weight than others.

Summary

Postural distortions caused by the feet can have a profound effect on the body. These stresses can

cause structural imbalances, which may lead to pain. A simple postural evaluation is essential in determining the cause of the postural problems. Once the cause is known, a proper treatment plan involving adjustments, exercises, and orthotics can be put in place, allowing for patients to recover.

References

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