

OPTIMAL HEALTH UNIVERSITY™

Presented by Dr. Michael Corey

Are Your Legs the Same Length? Are You Sure?

Without knowing it, many people are walking around with one leg shorter than the other — a situation that may lead to chronic body pain. According to scientific studies, even a differential of a few millimeters (less than a quarter inch) in leg length can trigger disorders ranging from arthritic knees to hip pain, low-back pain and even headache.

Leg length inequality (LLI) is more common than most people realize. However, it often goes undetected. That's why Dr. Corey routinely evaluates patients for this widespread condition.



Anatomical Short Legs vs. Functional Short Legs

There are two types of “short legs.” Dr. Corey explains to patients that each has its own unique characteristics.

In the case of *anatomical short leg*, the bones in one leg are shorter in length than the other. This contrasts with *functional short leg*, where the bones of each leg are the same length. In the latter, however, one of the leg bones has shifted up or down: essentially functioning as if it were shorter.

Anatomical Short Legs

In young people, anatomical LLI may be due to an unequal growth rate of the legs. Other origins include fractures, surgery, birth defects, bone disease and ailments of the hip, knee or ankle joints.

Functional Short Legs

While a functional short leg is the same length (or nearly so) as its partner leg, it performs as if it was short.

Functional short legs are extremely common and often go unnoticed, leaving the individual to suffer needlessly — sometimes for years.

The following are just a few of the causes related to functional short legs:

“Flat” Feet

“Flat” feet, also known as fallen arches, are a widespread malady. Pronation is the technical term for this disrupted foot structure. When pronation occurs, the foot rolls inward, effectively lowering the leg.

Asymmetrical Hips

The hip is comprised of a central *sacral* bone, which connects to the spine, and two *iliac* bones on either side that connect to the thighbone (femur). If the bones of the hip are slightly out of place, a condition known as *sacroiliac (SI) joint dysfunction* ensues.

SI joint dysfunction is relatively common. Researchers at Vancouver Gen-



eral Hospital in British Columbia, Canada, used computer tomography (CT) imaging to identify pelvic asymmetry. Out of 323 individuals scanned, five percent had significant alteration in the alignment of the hipbones (*Spine* 2003;28:1335-9).

Dr. Corey finds that minor rotation or elevation of one or more hipbones is a hallmark of SI joint dysfunction. Consequently, one side of the hip elevates, taking with it the attached femur bone.

Imbalances in the Spine

When evaluating a patient with LLI, Dr. Corey takes care to uncover any possible spinal dysfunction associated with the condition.



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The spine consists of 24 bones (vertebrae) stacked on top of each other. This column rests on the sacral bone of the hip. If the column shifts, it may agitate the placement of the hip-bones, leading to SI dysfunction and, in turn, to LLI.



Subtle shifts in spinal alignment are known as **vertebral subluxations**. This pervasive malady is linked with headache, back pain, asthma, ear infection, infantile colic, leg pain and other ills.

Research demonstrates that approximately 50 percent of those with significant LLI also have a postural problem, such as scoliosis or an altered spinal curve (*J Manipulative Physiol Ther* 1991;14:368-75).

Muscular Tension

Muscular spasm or tension in the legs, hips or low back may kindle a chain reaction causing one leg to rise.

Conditions Associated With LLI

Because the body works as a unit, rather than a series of isolated segments, some of the conditions listed above (asymmetric hips, spinal imbalances, vertebral subluxations and muscle tension) that **cause** LLI may also **be caused by** LLI.

Taking this connection one step further, because LLI may cause vertebral subluxations, LLI may also spark disorders associated with vertebral subluxations, such as headaches, carpal tunnel syndrome, shoulder pain — and of course back pain.

An analysis of 74 volunteers revealed that 85 percent of those with LLI had

chronic back pain (*J Manipulative Physiol Ther* 2002;25:425).

In addition, LLI may increase a person's odds of suffering a ruptured (herniated) spinal disc. Researchers examined 132 people (73 men and 59 women) with herniated spinal discs in their lower backs. Of these, a whopping 104 had an LLI of one mm or more. In 56.1 percent of men and 70.2 percent of women, the pain radiated to the shorter leg.

The study's authors wrote that "the results of this study showed a statistically significant association between leg length discrepancy and the side of radiating pain in a case series of patients with lumbar herniated discs." (*Spine* 1999;24:684-6.)

How Common Is LLI?

An investigation of anatomical LLI in approximately 600 young men determined that 32 percent had a short leg (*Ups J Med Sci* 1988;93:245-53). Clinical evidence reveals that functional short legs are much more common.



Athletes at Elevated Risk

LLI may pose particular hazards for athletes. For instance, according to one study in the journal *Sports Medicine*, "Leg length inequality has been linked with lower extremity stress fractures, low-back pain, hip pain and vertebral disk problems of runners." (*Sports Med* 1992;14:422-9.)

How Does Chiropractic Care Correct LLI?

Chiropractors take a comprehensive approach to correcting LLI and associated disorders. They start by determining the true origin of the short leg.

In cases of anatomical short leg, the doctor may recommend specialized heel lifts or shoe inserts called orthotics.

Orthotics may also be appropriate if the LLI is linked with a pronated foot. In addition, exercises to strengthen the arch of the foot may be in order.

When misalignment of the spine or hips is to blame (or occurs as a side effect of LLI), doctors of chiropractic utilize a specialized technique to gently return these structures to optimal balance. This effective procedure is referred to as a **chiropractic adjustment**.



Get a Leg up on Good Health!

A wobbly restaurant table shimmies and shakes because one of its four legs is shorter than the other. It's the same with people.

It's vital to have your leg length checked at least once a year by a licensed doctor of chiropractic. Growing children, athletes and anyone engaged in work or activities that may disrupt the posture of the feet, hips or spine should schedule more frequent evaluations.

Even if you aren't in pain, being aware of leg length discrepancies can prevent future discomfort and maintain healthful posture.

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