

Leg Length Discrepancy

Leg length discrepancy occurs whenever one leg appears to have a different length than another on an osteopathic exam. This is often described as short leg syndrome. This can be categorized in two ways: anatomic short leg and functional short leg. An anatomic short leg occurs when one leg is anatomically shorter than the other. The most common cause of anatomic short leg is hip replacements. A functional short leg occurs when a leg measures shorter than the opposing leg due to inequalities in the surrounding anatomy. The body can compensate for this in a variety of ways such as with innominate rotation, creating an unlevel sacral base, pelvic shifts, and lumbar spine sidebending away. Treatment first involves correcting somatic dysfunctions in the surrounding anatomic area to correct most functional short leg syndromes. Then, the next step is to obtain a standing X-Ray to help distinguish anatomic and functional short legs. Short leg syndrome is often treated with heel lifts. In the elderly, practitioners often start with 1/16th of an increase and should be increased every two weeks. In the young, flexible or fit, practitioners begin with 1/8th of an inch and increase by 1/8th of an inch every 2 weeks. The maximum lift inside the shoe is 1/4th of an inch, an additional 1/4th of an inch can be added outside the shoe for a maximum total heel lift of 1/2th of an inch.



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Short Leg Syndrome

Anatomic Short Leg

Anatomic Short Leg

A patient has an anatomic short leg when one leg is shorter than the other anatomically and does not simply appear to be shorter due to surrounding anatomy. The most common cause is hip replacements.

Functional Short Leg

Functional-chair Short Leg

A functional short leg occurs when one leg appears to be shorter than the other but is not actually shorter than the other. The surrounding anatomy just makes the leg appear shorter.

Compensation Mechanisms

Innominate Rotation

Innominate-inn Rotating

Short leg syndrome has many compensation mechanisms. Commonly, the short leg will have an anterior innominate rotation on the same side. This works to extend the length of the short leg to create some semblance of homeostasis. The long leg typically has a posterior innominate rotation on the same side, in an effort to balance the length discrepancy between the legs.

Unlevel Sacral Base

Unlevel Sack-rum Base

The sacral base is almost always inferior on the side of the short leg. This is another mechanism the body uses to attempt to compensate.

Pelvic Shifts

Pelvic Shift

On exam, the pelvis commonly shifts to the side of the long leg in patients with leg length discrepancy.

Lumbar Spine Sidebends Away

Lumber Spine Sidebends Away

On the side of the short leg, the lumbar spine commonly side bends away. The lumbar spine will also rotate toward the side of the short leg. These structural findings commonly occur as the body compensates for the leg length discrepancy in an effort for the body to maintain balance.

Diagnosis

Standing X-Ray

Standing X-Ray

If an anatomic short leg is suspected after osteopathic manipulative treatment has been performed to correct relevant somatic dysfunctions, then a standing X-Ray is warranted. The height of the femoral heads is measured; if there is a difference of more than 5 mm then consider using a heel lift.

Treatment

Correct Somatic Dysfunctions

Correcting Sumo-tick Dysfunctions

Many times, the leg length discrepancy is due to a functional short leg, and lots of progress can be made with Osteopathic manipulation. Once somatic dysfunctions of the lower spine, innominates, and sacrum is corrected an anatomic short leg can be investigated further.

Heel Lift Guidelines

Elderly Start with 1/16th of an Inch

Elderly-person with Sweet (16) Cake and Inch-worm

Patients who are elderly, fragile, arthritic, osteoporotic or in acute pain, start with 1/16th of an inch and increase by increments of 1/16th of an inch every two weeks. If a patient has a hip replacement or another sudden change in leg length, then it is acceptable to replace the entire amount of length discrepancy right away. Stop when one-half to three-quarters of the discrepancy is replaced.

Youth Start with 1/8th of an Inch

Youthful-person with One (8) Ball and Inch-worm

Patients who are young, flexible, fit or otherwise healthy can have their leg length discrepancy replaced more rapidly. Apply 1/8th of an inch every two weeks until 1/2-3/4th of the discrepancy is replaced.

Max Inside the Shoe is 1/4th

Biggest Shoe with One (4) Fork and Inch-worm

The maximum height that can be applied inside the shoe is a fourth of an inch. An extra fourth can be applied to the outside of the shoe.

Max Heel Lift is 1/2 an Inch

Biggest Heel with 1/2 Inch-worm

The maximum heel lift that is possible is a 1/2". If more lift is needed then the lift should be applied from heel to toe to prevent pelvic shift on the opposite side.
