

LLD: Leg Length Discrepancy

The importance of keeping your pelvis level

This article cites 27 references.

One test we do on every patient on every office visit is to check to see if there is a LLD (Leg Length Discrepancy) or what we sometimes call it a “short leg”. The patient is lying face down for this test. The test is a crucial component of understanding pelvic, hip, low back and leg position. If there is a difference between the left and right leg, it is noted, and muscle work or adjustments are performed to correct the imbalance. Here’s some background on the importance of this test:

- CAUSES of LLD:
 - Functional: Soft tissue muscle contraction, muscle de-activation, foot pronation, foot imbalance, pelvic imbalance and rotation lumbar vertebra and scoliosis.
 - Structural: Femur or lumbar and pelvis bones that are uneven.
- HOW MUCH shorter is important: Why more than ½” difference is critical.
 - As little as 3/8” short on one side leads to knee pain and increases arthritis on that knee
 - 3/4”+ leads to pain and arthritis in both knees
 - 73% of stress fractures occur in the longer limb
 - Patients requiring total hip replacements had hip arthritis in the long leg
- RUNNING with a short leg:
 - Significant compensation and injury can occur from the foot to the pelvis and low back.
- TESTING for a short leg:
 - 3 orthopedic tests can evaluate the problem effectively.
 - Specific X-Rays are required to determine if there are uneven bones.
- CORRECTING a short leg: Proper diagnosis is the key.
 - Adjustments and muscle work can usually retrain and maintain balance.
 - Children under the age of 15 with LLD can be corrected by monitoring them every 3-6 months (office visits) and making the appropriate corrections.
 - A heel lift or full lengths lifts on one side can help, BUT NOT ALWAYS!

From Dr. Cerami: LLD is extremely common and critical to correct for short term pain relief, and to avoid arthritis in our later years. Check out the video to see what it looks like.

To read the entire article go to:

UtahSportsandWellness.com/resources/articles or scan QR code.



Inequality in Leg Length is Important for the Understanding of the Pathophysiology of Lumbar Disc Herniation

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Mehmet Sabri Balik, Ayhan Kanat, Adem Erkut, Bulent Ozdemir, Osman Ersagun Batcik: From Recep Tayyip Erdogan University, Rize, Turkey.

These authors evaluated 39 subjects with leg length discrepancy and low back pain and 43 controls to quantify the occurrence of disc herniation between between the two groups.

KEY POINTS FROM THIS ARTICLE:

- 1) Low back pain has a lifetime prevalence of 85%.
- 2) The primary cause of LBP is disc disease.
- 3) "Inequality in leg length may lead to to abnormal transmission of load across the endplates [causing] degeneration of the lumbar spine and the disc space."
- 4) Traditionally, surgery has been the primary approach in the treatment of discogenic low back pain. However, "the surgical treatment of ruptured lumbar intervertebral discs is sometimes discouraging to both the surgeon and the patient."
- 5) These authors suggest that the surgical treatment of lumbar disc herniation does not always lead to improved outcome because of "abnormal coronal balance." "Correction of abnormal load transmission across the spine and degenerated disc may, therefore, be beneficial."
- 6) "One of the essential roles of the spine is to support mechanical loads in the upright position. Balance of the body essentially depends on how far the head is to the midline."
- 7) Spinal imbalance may be an important cause for failed back surgery cases.
- 8) Humans continually adjust their balance by means of micromovements, thereby ensuring that the body's center of gravity remains harmoniously within a base of support in a fashion requiring minimal muscular effort.
- 9) "Inequality in leg length may lead to abnormal transmission of load across the endplates and degeneration of the lumbar spine and the disc space."
- 10) Leg length discrepancies "may lead to disorders in postural movement coordination. It may lead to significant changes in spinal posture and deterioration of postural stability."

- 11) "Subtle anatomic abnormality in the pelvis is associated with altered mechanics in the lumbar spine."
- 12) "Human coronal balance may be one of the causes of operative failure after disc surgery. Assessment of pathologic coronal imbalance requires a clear understanding of normal coronal alignment." **[Important]**
- 13) Short extremity length and lumbar disc herniation were statistically coupled in this study. "Occurrence of disc herniation is statistically different between patients with short leg and controls." "Our result showed statistically significant difference."
- 14) "Patients with chronic LBP have a minor balance defect. Inequality in leg length is important for the understanding of the pathophysiology of lumbar disc degeneration and herniation."
- 15) "Patients with intervertebral disc disease are characterized by asymmetrical leg loading." "Leg length discrepancy may be another causative condition" in low back pain.
- 16) "An asymmetrical loading pattern may deteriorate spine biomechanics."
- 17) "This study shows that if an individual has a short leg, stress on the lumbar spine will be increased; the lumbar disc degeneration could in fact be the more significant issue with a leg length inequality in these patients."
- 18) This study, for the first time, shows that disc herniation may actually occur as a result of the leg length inequality. "Our study suggests that lumbar disc herniation may implicate abnormal loading due to leg length discrepancy."
- 19) "A coronal imbalance of the spine is usually noted in patients with leg length discrepancy." "Abnormal patterns of load transmission may be accepted as a principal cause of degenerative changes in these cases."
- 20) "Our observations suggest that LBP may have etiologies related to abnormal load transmission due to coronal imbalance. It seems that a successful treatment may sometimes exist beyond good surgery. In these situations, abnormal coronal balance may be an important factor."
- 21) "The results of this study showed a statistically significant association between leg length discrepancy and occurrence of lumbar disc herniation."

COMMENT FROM DAN MURPHY

This study adds support for why all people should be evaluated chiropractically for pelvic symmetry and coronal alignment; correction of such asymmetries may prevent low back pain and disc disease/herniation, and improve surgical outcomes.