What is a limb length discrepancy?
A discrepancy is noted when there is a difference in the length of either the arms or legs. Arm length discrepancies usually do not cause any significant problems in function. Most functional problems are associated with significant leg length discrepancies (LLD).

Limb length discrepancy is usually mild and is actually quite common in the population. One study found that 32% of the population had a discrepancy 1/5 to 3/5 of an inch. Mild leg length discrepancy is a normal variant that does not require any treatment. Larger differences may require treatment to help improve quality of life.

What causes it?
There are many factors that can contribute to leg length discrepancy. A common cause is a previous fracture to a bone in the leg. If the broken bone heals in a shortened position, or if there were injuries to the muscles and tendons surrounding the broken bone, or if the break involved the growth plate of the bone, the leg might be shorter. The opposite can also be true- sometimes a broken bone grows faster after it heals and the injured leg is actually longer.

Less common causes of leg length discrepancy include a previous infection of the bone (especially if it occurs during infancy), diseases of inflammation of joints (such as from Juvenile Arthritis), and bone Diseases or Dysplasias (such as Neurofibromatosis, Multiple hereditary exostoses, and Ollier’s disease).

There are many cases in which the cause of the discrepancy is unknown. Even though these conditions are usually present at birth, the difference is too small to be seen. Not until the child grows, does the discrepancy become more noticeable. When the cause is unknown, the condition is called hemihypertrophy (if one leg is abnormally large) or hemiatrophy (if one leg is abnormally small).

How is it diagnosed?
A discrepancy of the legs can be measured during a physical exam. Measuring the level of the hips, wooden blocks of known sizes may be used under the shorter leg to bring the hip higher. Radiographs may also be taken to measure the length of each bone. Your child will need to be followed in intervals by the physician to evaluate any changes in the difference of lengths.

What problems can it cause?
Small discrepancies do not cause back or hip or knee problems, and usually do not affect the way we walk. Large, uncorrected discrepancies over decades might cause back or hip or knee problems, and do cause uneven walking. This is why larger discrepancies are usually treated surgically and small discrepancies are not.
Leg Length Discrepancy

**What is the treatment?**

If your child’s leg length discrepancy will be less than two centimeters at the end of growth, your physician may prescribe a shoe insert. If your child has some difficulties with walking, running, or back pain, shoe inserts may help to alleviate some of these symptoms. Most children with this size of discrepancy never experience symptoms.

If the leg length discrepancy is larger, surgery may be required. For medium sized discrepancies, there are small surgical procedures which slow down the growth of the opposite leg so the shorter side can catch up. Correction in the difference in length with this procedure is not immediate, but will be gradual over 1 to 2 years. Timing for this procedure is important to reach equal leg lengths by the end of growth in mid-teens.

For large sized discrepancies, more complicated surgical procedures can be performed, such as shortening the longer leg and lengthening the shorter leg. The bone is lengthened using a device called an external fixator. A frame is connected to the bone pins and wires. At home, the patient or the family turns knobs or screws on the frame to create length in the bone. To gain one inch, it usually takes 3 months. There are significant risks of this procedure, such as infection, stiffness to adjacent joints, and over or under correction. This form of treatment requires regular follow up visits with your orthopaedic surgeon, cleansing the pin sites regularly, dialing out the frame several times each day, and possibly rehabilitation.

In extreme cases where the leg is very short, lengthening may not be an option. These situations, fortunately, are rare.