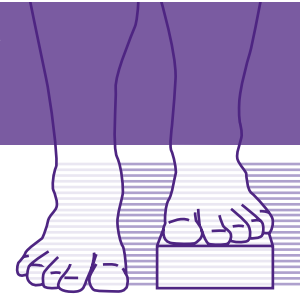


# LEG LENGTH DISCREPANCY

## WHAT IS IT?

A difference between the lengths of the lower limbs. A leg length discrepancy can be broken into two types: functional or structural.



**Functional** – A discrepancy due to joint/musculature tightness, muscular imbalance or asymmetrical subtalar motion at the level of the foot

**Structural** – Osseous malformation of the load bearing bones (tibia or femur)  
– Can be acquired (surgery, trauma) or congenital (disruptions with growth)

## TREATMENT OPTIONS

ⓕ Functional  
Ⓢ Structural

 ⓕ  
Soft Tissue Mobilization

 ⓕ  
Strength Training

 ⓕ Ⓢ  
Custom Made Orthotics

 Ⓢ  
External Shoe Lift (>1cm)

 Ⓢ  
Internal Shoe Lift (<1cm)

 Ⓢ  
Surgery

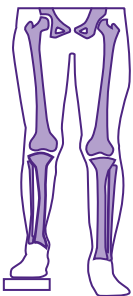
## TESTS

### Allis/Galeazzi Test



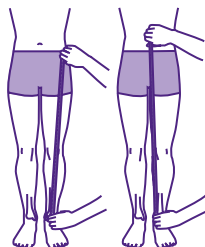
If one knee is higher than the other (top) this may indicate a longer tibia length. If one knee is more anterior than the other (bottom) this may indicate a longer femur length.

### Scanogram/CT

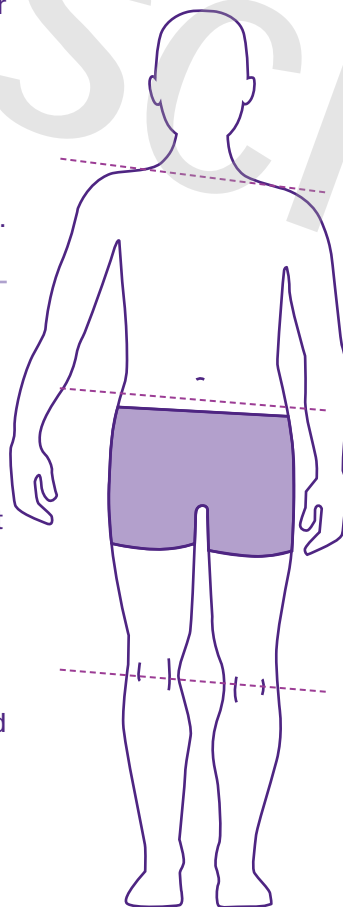


Considered to be the “gold standard” but exposure to radiation and the overall cost of the procedure may limit its use.

### Physical Measurement Method



Commonly measured from ASIS to medial malleolus. May be used in conjunction with the “indirect method” (using blocks to build up under the short side).



## VISUAL CUES

(Static weight-bearing)

### Long Side

- Knee flexion, possible valgus knee position
- Everted rear foot (rear foot valgus)

### Short Side

- Hip drop (disparity in height of iliac crests)
- Shoulder drop with possible lateral head tilt
- Inverted rear foot (rear foot varus)
- Knee extension or hyperextension

## WIND SWEEP LOOK?

When observing a leg length discrepancy the foot on the longer limb will appear more pronated while the shorter limb will appear more supinated (pictured below).



## GAIT OBSERVATIONS

### Long Side

- Knee remains flexed throughout gait
- Increased out toeing
- Circumduction for ground clearance
- Increased duration of stance phase

### Short Side

- Pelvis drop
- Asymmetrical foot pronation
- Possible Trendelenburg sign noting hip musculature weakness
- Decreased duration of stance phase

# LOWER BACK PAIN

## THE ROLE OF THE FOOT & LOWER EXTREMITY

### RISK FACTORS

- 2<sup>nd</sup> most common cause of disability in North America
- More than 1/3 of population will experience lower back pain at some point in their life
- Usually multifaceted issue with no apparent cause
- Due to its often insidious onset, a multidisciplinary approach to treatment is often beneficial

### PREDISPOSING FACTORS (from the level of the foot and lower extremity)

#### Leg Length Discrepancy

Pelvic obliquity

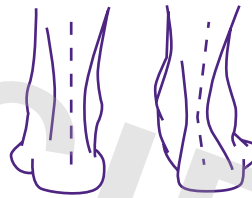


Asymmetrical limb and joint movement pattern



#### Pronation

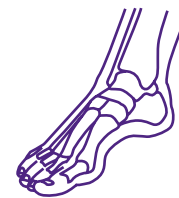
Excessive - increased demand on leg and lumbopelvic musculature



Normal

Excessive

Reduced - diminished ability to absorb impact associated with gait



Pes Cavus/High Arch

#### Other factors

- Previous injury
- Muscular weakness: gluteus medius, hip abductors, trunk musculature
- Gender: women > men
- Poor general health
- Work place activities
- Stress: physical & psychological

### DIFFERENTIAL DIAGNOSIS

- Non-specific lower back pain
- Structural issues:
  - Leg length discrepancy
  - SI joint impairment
- Injury:
  - Disc or facet
  - Soft tissue (muscle)
- Neurogenic Etiology:
  - Spinal stenosis
  - Congenital
  - Developmental

### TREATMENT OPTIONS

- ① Level 1 evidence
- ② Level 2 evidence



Aquatic Exercise



Yoga



Behavioural Therapy



Manual and Physical Therapy



Custom Foot Orthoses



Ability. Restored.  
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