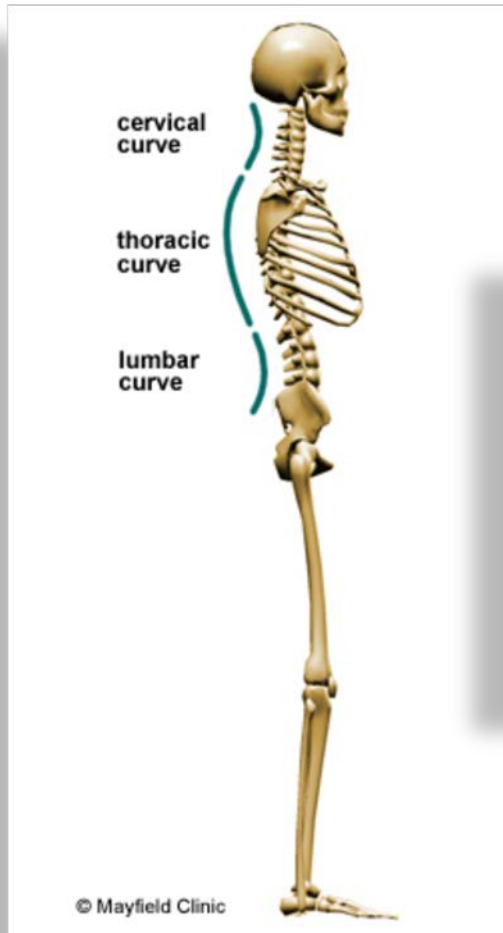


Posture



- **Safety/Injury**
 - Balance/Imbalance-Falls
 - Resistance/Susceptibility
 - Forces: Accelerations/Decelerations
 - Joints:
 - Stability/Instability
 - Traction/Impingement
 - Muscles: Strength/Weakness
- **Energy Efficiency**
 - Stride length/Step cadence
 - Braking
 - Gliding
 - Bounce/Elasticity
 - Resonance
 - Muscle work
- **Performance**
- **Dynamic/Static Foot**
- **Posture**
- **Adaptation**

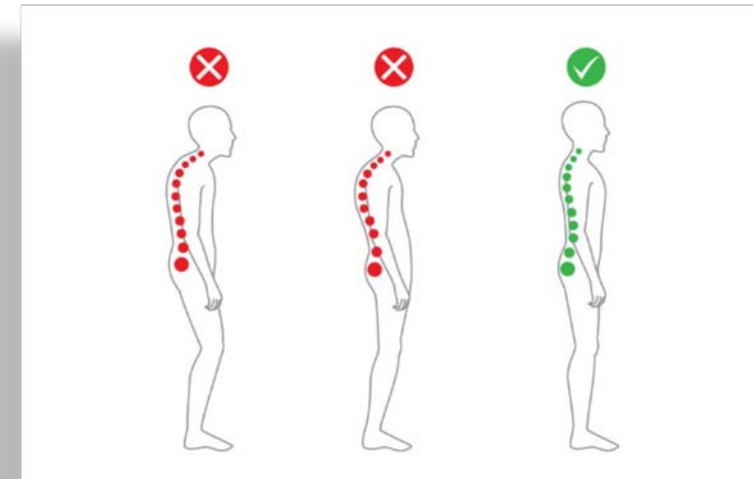
Posture

Heel-toe Walking (HTW)



“BAD” Posture

- Head & shoulders leaning forward
- Slouching
- Torso leaning forward
- Longer stride



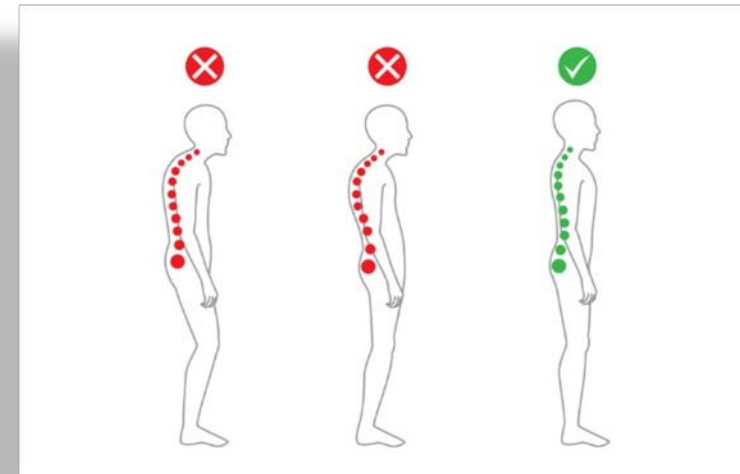
Posture

Heel-toe Walking (HTW)



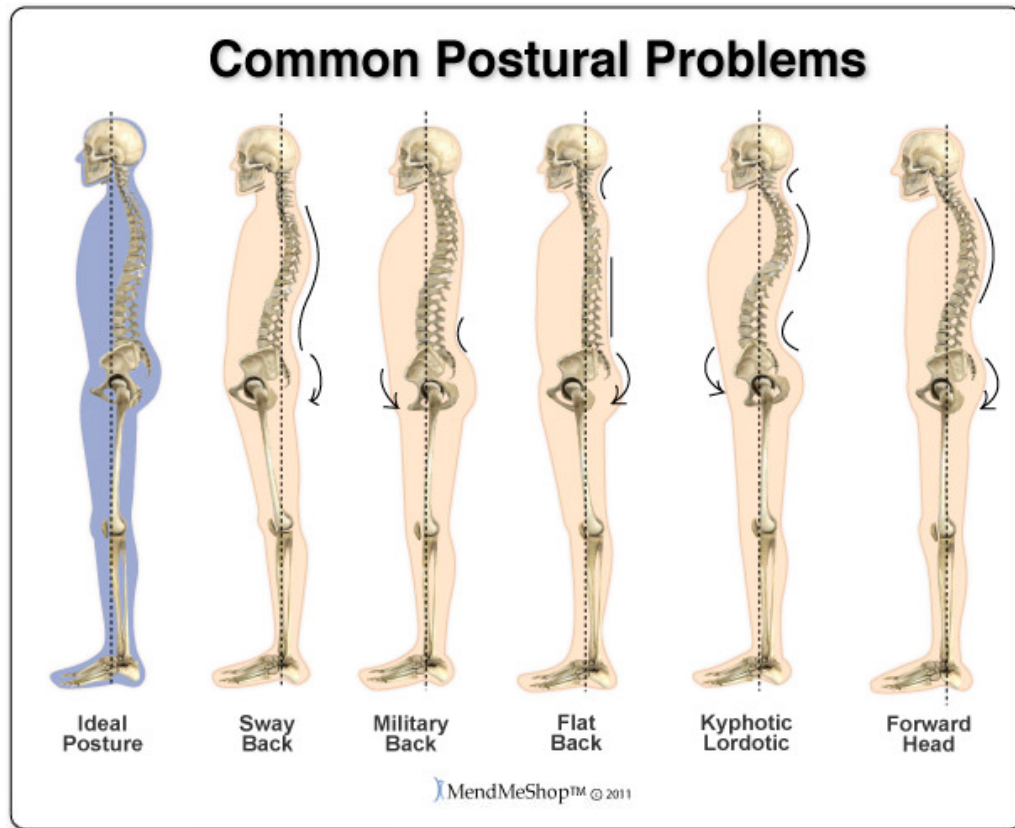
“Good” Posture

- More upright / altitude
- Shoulders back
- Shorter stride



Spinal Alignment

Normal/Abnormal



Normal Spinal Function

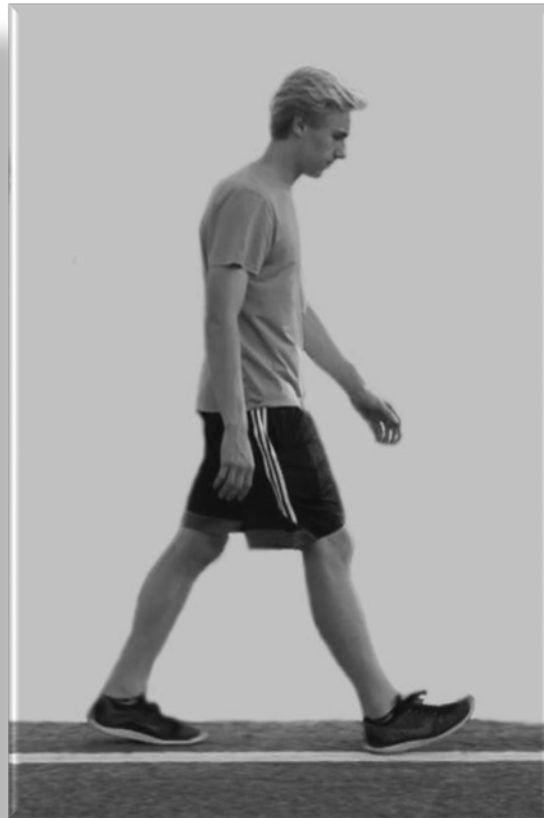
- Normal spinal alignment
- Each intervertebral disc is parallel with the ground
- Disc functions best in compression like a “shock absorber”
- Walking stride length affects spinal alignment and forces at the disc
- The effect is significant because we walk and stand a lot.

Walking Posture Comparison

(DW/HBW)



(HTW)



Stride Length Dependent

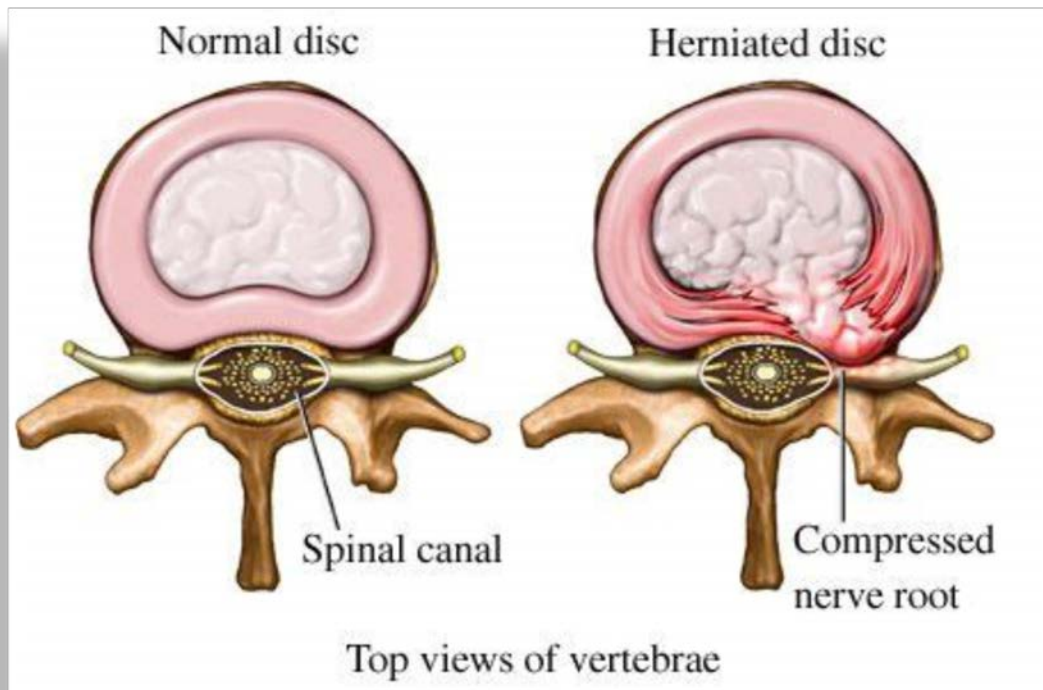
"GOOD" Posture

- DW/HBW
- Shorter stride

"BAD" Posture

- HTW
- Longer stride

Intervertebral Disc Normal/Abnormal



Cause: Abnormal Disc

- Heel-toe walking
- Longer stride
- Head & shoulders leaning forward for walking balance
- Creates shear forces at the disc
- Annulus fibrosis breaks down
- Disc ruptures