



## **Skeletal Variations and How They Apply to Movement**

How do we personalize movement to accommodate various bodies and skeletal variations?

In this workshop we will explore what affects range-of-motion. Learn how some common skeletal difference will affect a person ability to do certain movements & shapes. We will also learn how to tell what is stopping a student from doing a certain movement, is it flexibility or skeletal variation?

### **What is Range of Motion?**

The full movement potential of a joint.

What affects someone ROM in a particular joint?

1. The skeletal structure of that joint, the bones (stability).
2. The ligament structure around that joint (stability).
3. The muscles around that joint (flexibility).

“Irregularity is to be expected in any biological form.  
Body parts are not interchangeable legos or Ikea furniture pieces made by factory molds.  
Wonkiness and asymmetry are part of the plan.”

--Playing with Movement  
Todd Hargrove

All of our bodies are vastly different. We often acknowledge variations in muscle strength or flexibility however we are unaware of skeletal variations.



Some common Skeletal Variations:

- Carrying angle in the elbow joint
  
- Hip Joints in the Pelvis
  - Direction the hip joint points
  - Length of the Femur neck
  - Angle of inclination of Femur neck

### Tension vs. Compression

Tension- The sensation of a muscle being stretched, the 'opening' of a muscle. Tension also relates to contraction (either sustained or temporary) and twisting.

Compression- When bone hits bone in the body OR tissues are compressed between two bones. Compression in and off itself is not bad and not painful, you've just hit you're full range-of-motion. If you try to push further it might lead to injury because the movement will go into other parts of the body.

So how do you tell the difference in your body?

When you feel the sensation in the direction you are moving **towards**, you are likely experiencing compression. When you feel the sensation in the area you are **moving away from** then that would be tension.

An excellent place to explore this is in external rotation in the hip joint. For example, in Butterfly Pose. When you sit in this shape the hips are in external rotation. To see if



you can not go any deeper due to compression or tension just notice where you are feeling the sensation.

If you feel restricted in the outer hip, that is direction your legs are **moving towards** (towards the ground), so that is compression. If you feel the restricted sensation in the area you are **moving away from**, the groin, then that tells us that there is tension in the groin muscle.

So if you feel it in the outer hip, compression, that tells us that you can not go any further in this pose as you have hit bone-on-bone in the hip joint. If you feel it in the inner thigh, tension, then we know that if you stretch the groin muscle more then you will eventually be able to go deeper.

If you, or your student, is feeling compression in a pose then you've hit your full range of motion in that joint. It will NOT change no matter how long you practice or how dedicated you are. And this limit is different for *every single body* because we all have unique skeletons.