



## LESSON 4 - MOVE OVER GRAY'S ANATOMY...

# *all aboard for Jing's anatomy!*

**This section describes the anatomy of the low back muscles and how we can find and palpate them accurately.**

To do this it is important to have an understanding of the anatomical language we use to describe the location and actions of muscles and other structures in the body. First of all it is important to be aware of the universal reference point for describing anatomical terms – anatomical position.

### ANATOMICAL POSITION

Used as a reference point, anatomical position is when the body is standing erect with palms facing forward.

### TERMS FOR DIRECTIONS AND POSITION

In anatomy rather than using vague terms like “up”, “down” or “behind” we use very precise terms so we know exactly what we are referring to.

- **Superior:** a structure closer to the head.
- **Inferior:** a structure closer to the feet.
- **Posterior/Dorsal:** towards the back of the body.
- **Anterior/Ventral:** towards the front of the body.
- **Medial:** Closer to the midline.
- **Lateral:** Further away from the midline.
- **Distal:** Further away from limb's origin/the body's midline.
- **Proximal:** closer to a limb's origin.
- **Superficial:** closer to the body's surface.
- **Deep:** Deeper in the body.

### TERMS OF MOVEMENT

Throughout the course we will be referring to certain anatomical movements of the spine and coxal (hip) joint. Below is a guide to understanding what these terms mean, followed by images of how these movements translate to the spine and coxal joint.

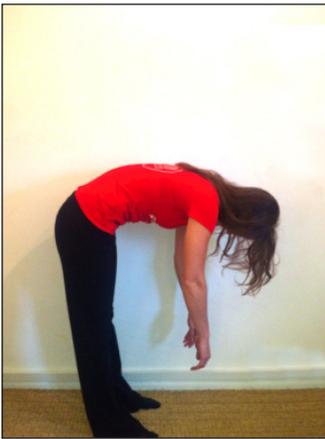
- **Flexion:** A movement that brings the bones closer together; decreases the angle at a joint; occurs in the sagittal plane. Usually brings a body part forward from anatomical position (except for the knee).
- **Extension:** A movement that straightens or opens a joint; increases the angle of a joint; occurs in the sagittal plane; brings a body part backwards from anatomical position (except for knee).
- **Abduction:** Moves a limb laterally away from the midline. Occurs on frontal plane. Only pertains to appendages. NB: to abduct the fingers is to spread them apart.
- **Adduction:** Moves a limb medially toward the body's midline. Occurs on frontal plane. Pertains only to appendages. NB: To adduct the fingers is to bring them together.
- **Rotation:** Pertains only to head and vertebral column. Occurs on transverse plane.
- **Lateral flexion:** Occurs at neck and trunk ie: when head or vertebral column bend laterally to the side.
- **Protraction and retraction:** pertain to scapula, clavicle, head and jaw only. Protraction is moving one of these structures anteriorly. Retraction is movement posteriorly.
- **Elevation and depression:** refer to movement of the scapula and jaw. Elevation is movement superiorly. Depression is movement inferiorly.
- **Medial/internal rotation:** Occurs at shoulder and hip joints. Limb turns in towards midline. Occurs on transverse plane.
- **Lateral/External rotation:** Occurs at shoulder and hip joint. Swings limb away from midline. Occurs on transverse plane.
- **Circumduction:** At shoulder and hip joints. Combination of extension, adduction, flexion and abduction. Together the actions form a cone shaped movement ie: swimming backstroke.
- **Pronation:** Takes place when the radius crosses over the ulna turning the palm down (“prone to spill it”)
- **Supination:** Occurs when radius and ulna lie parallel to each other (“carrying a bowl of soup”) i.e. palms up.
- **Plantar flexion and dorsiflexion:** refer only to ankle. Plantar flexion: bending the ankle to point your foot into the earth (“planting your foot). Dorsi flexion points toes to sky (“dor-sky flexion”)
- **Inversion/Eversion:** occur at feet. Inversion brings sole of foot medially. Eversion moves the sole laterally.

**OVERVIEW OF MUSCLES INVOLVED IN LOW BACK PAIN**

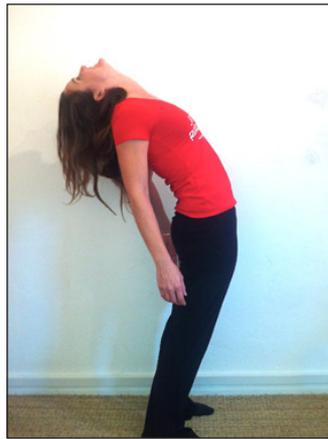
When watching the video you may want to refer to a good anatomy atlas such as *“The Trail Guide to the body”* by Andrew Biel. Below are pictures of the different anatomical movements we talk about in the spine and the coxal joint:

**MOVEMENTS OF THE SPINE**

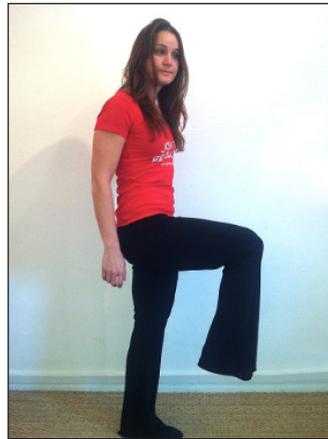
**MOVEMENTS OF THE COXAL (HIP) JOINT**



↗ Flexion



↗ Extension



↗ Flexion



↗ Extension



↗ Rotation



↗ Lateral Flexion



↗ Internal Rotation



↗ External Rotation



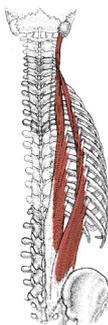
↗ Abduction



↗ Adduction

**Good bodywork is all about precision – knowing exactly where to find the muscles we are treating for trigger points and fascial restrictions.**

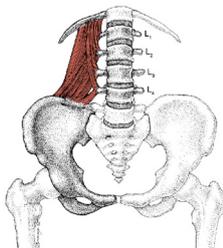
The following section walks you through how to find the muscles you will be treating – it will help you enormously to familiarise yourself with this first before going onto the technique section of lesson 6.



### **ERECTOR SPINAE**

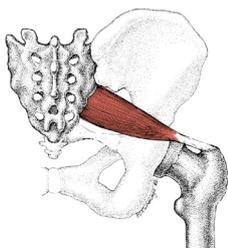
Remember that the Jing memory aid: *“I Love Spaghetti”* helps you remember the names of the different branches of the erector spinae from lateral to medial: Iliocostalis, Longissimus, Spinalis.

- Partner prone: Lay both hands along either side of lumbar vertebrae.
- Ask your partner to extend spine as in doing a slight yoga “cobra” then relax.
- Palpate the ropy fibres of the erectors moving inferiorly to the sacrum and superiorly to the thoracic vertebrae. See if you can distinguish the outer edge.
- Note the most ropy of the muscles is the longissimus.



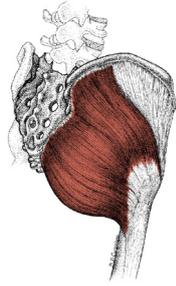
### **QUADRATUS LUMBORUM**

- **Partner prone:** locate the 12th rib and iliac crest. Lay your fingertips along the lateral edge of this square, pressing underneath the erector spinae.
- Use slow firm pressure to sink into the edge of the quadratus.
- **Muscle action:** ask your partner to elevate the hip to the shoulder to feel its contraction.



### **PIRIFORMIS**

- **Prone:** Locate the greater trochanter, PSIS and coccyx (tailbone). Together these landmarks form a “T”. The piriformis is located along the base of the “T”.
- With your fingers on the piriformis bend the knee to 90 degrees and rotate the leg back and forth. You will feel the piriformis move under your fingers. If your partner laterally rotates the leg against your resistance you will feel the muscle contract.



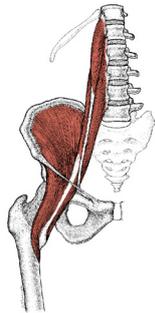
### GLUTEUS MAXIMUS

- **Prone:** Lay the flat of your hand on the 'meat' of the buttocks. Ask your partner to extend the hip against your resistance ("raise your leg to the ceiling").
- Palpate the fibres which run from the iliac crest and edge of the sacrum to the femur. Note the textural differences between the adipose tissue of the buttock and the muscle fibres of the maximus. The adipose is superficial and has a soft gel like consistency.



### GLUTEUS MEDIUS

- **Sidelying:** Lay the webbing of your hand along the iliac crest while the other hand locates the greater trochanter (bump on outside of femur). Your hands will form the pie shaped outline of the gluteus medius.
- Ask your partner to slightly abduct her thigh against your resistance to outline the muscle.



### PSOAS

- **Supine:** Hip flexed (knee up). Place your fingertips just lateral to the abdominal muscles and between the ASIS and the navel. Slowly compress your fingerpads into abdomen using an anti-clockwise rotational movement to displace the intestines out of the way. Keep your fingertips at a 45 degree angle.
- When you contact the psoas ask your partner to flex the hip slightly (bring your thigh toward your head) to feel the muscle contract.
- Take care to proceed with "listening touch" as the psoas can be tender. If you feel a pulsing underneath your fingers, move laterally as this is the abdominal aorta.