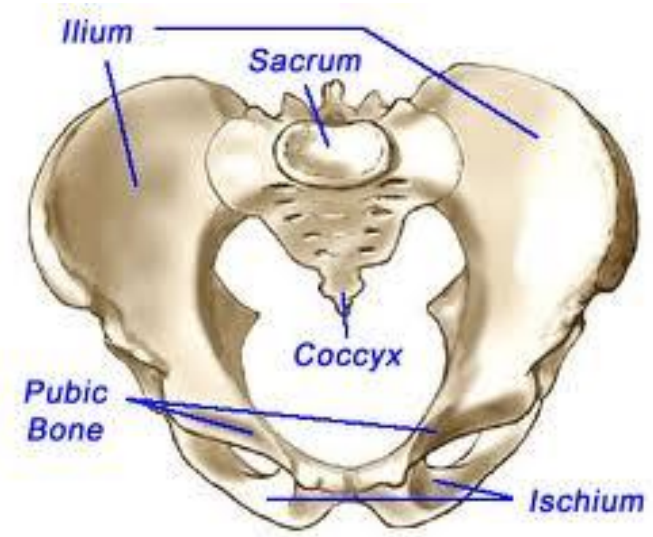
THE PELVIC GIRDLE

Clarification of Terms

- Four **bones** make up the pelvic girdle:
  - Sacrum
  - Coccyx
  - Two hip bones…which are comprised of:
    - Ilium
    - Ischium
    - pubis



- The pelvic girdle is also referred to as the pelvis
- **Joints** in the pelvis girdle:
  - Right and left sacroiliac joints
  - Symphysis pubis
  - Lumbosacral joint

Lippert, p247

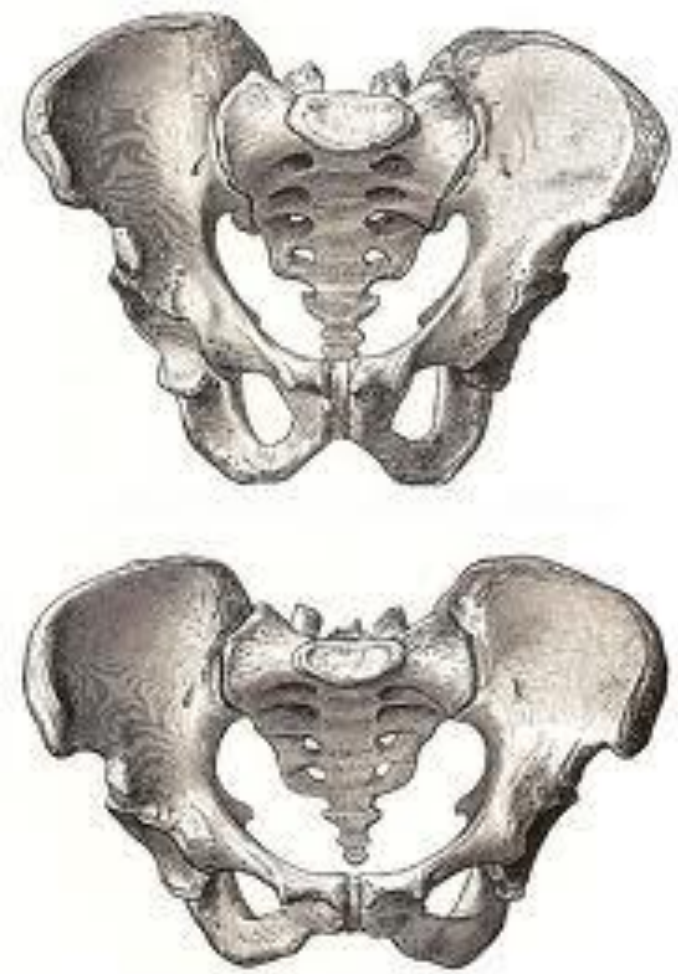
Function of Pelvis

- Supports the weight of the body through the vertebral column and passes that force onto the hip bones
- Receives ground forces during walking and transmits them upward toward the vertebral column
- Supports and protects pelvis viscera
- Provides attachment site for muscles
- Makes up bony portion of birth canal

Lippert, p247

The Male and Female Pelvis

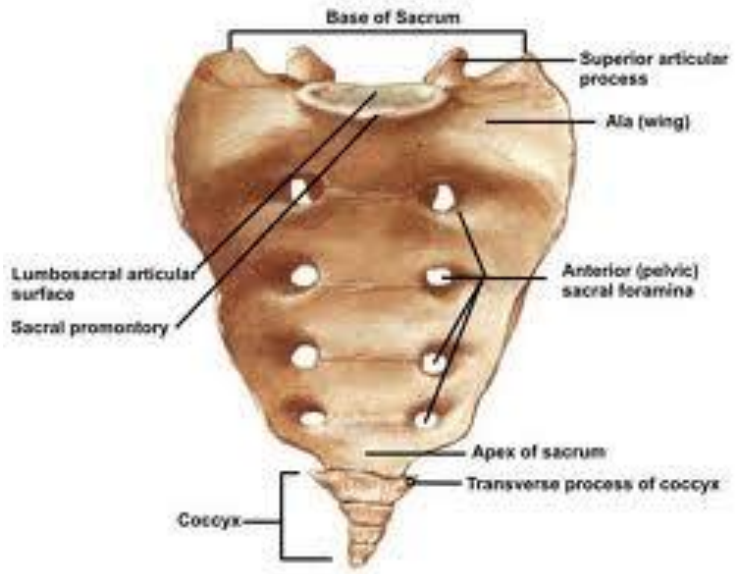
- The area within the pelvis cavity is greater in women
- The pelvic arch is wider and more rounded in women



Lippert, p248

Sacroiliac Joint…Osteology

- The two bones of the SI Joint are:
  - Sacrum
  - Ilium



Lippert, p249-250

Sacroiliac Joint…Motion

- The actual type and amount of movement occurring at the SI joint is the subject of considerable controversy.
- However, it is generally accepted that the motions that do occur at the SI joint are
  - Nutation
  - counternutation.

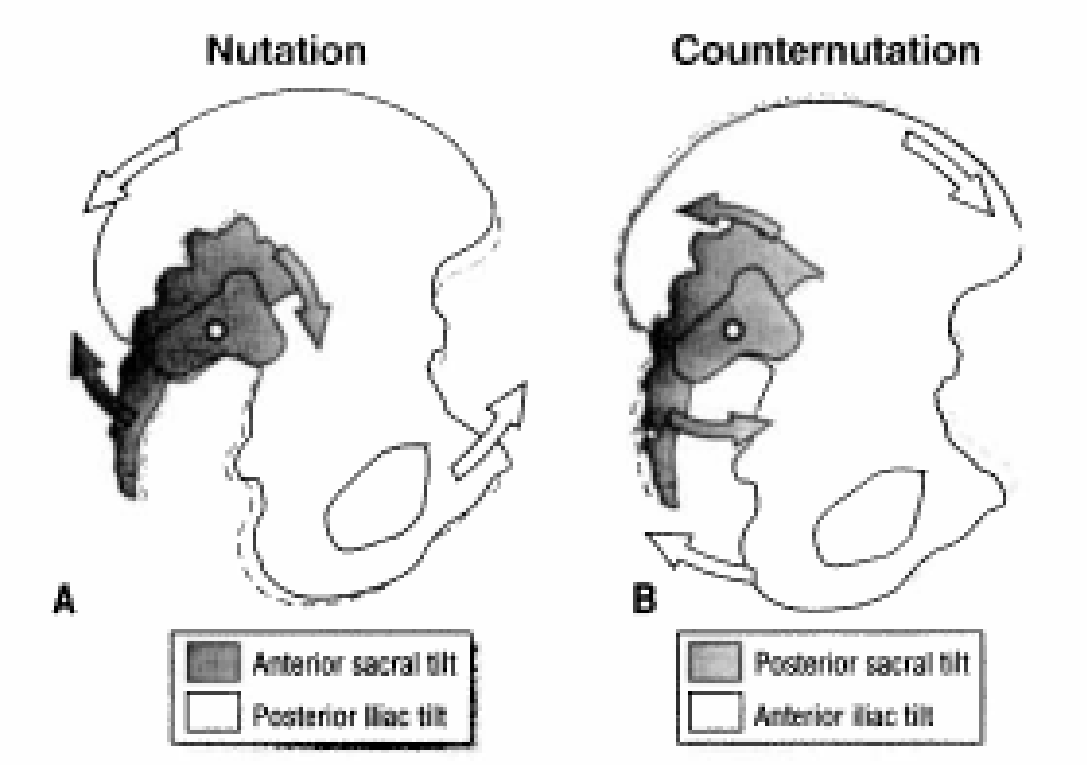
Lippert, p249

Sacroiliac Joint…Motion

- **Nutation**
  - Sacral flexion (anterior rotation of the sacrum in relation to the ilium)
  - The base of the sacrum (on the superior end) moves anteriorly and inferiorly
  - Occurs WITH trunk flexion or hip extension
- **Counternutation**
  - Sacral extension (posterior rotation of the sacrum in relation to the ilium)
  - The base of the sacrum moves posteriorly and superiorly
  - Occurs WITH trunk extension or hip flexion

Lippert, p249

Sacroiliac Joint…Motion



Mansfield, Fig 8-44

Sacroiliac Joint…Supporting Structures

- "Because the SIJ is meant to absorb a great deal of stress while providing great stability, it is heavily endowed with ligaments."

Lippert, p251

Pubic Symphysis

- **Osteology**
  - Right and left pubic bones join anteriorly
- **Motion**
  - Little movement, except during childbirth
- **Supporting Structures**
  - A fibrocartilagenous disk lies between the right and left pubic bones
  - Held together by the superior and inferior pubic ligaments

Lippert, p252

Lumbosacral Joint

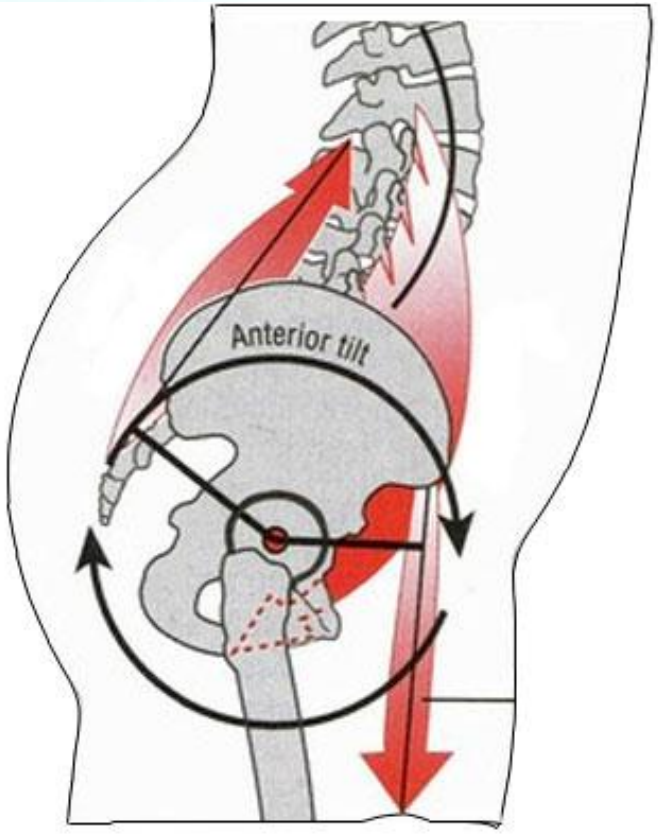
- **Osteology**
  - Joint made up of 5th lumbar vertebra and 1st sacral vertebra
- **Motion**
  - Pelvis motion occurs in all 3 planes
- **Supporting Structures**
  - Intervertebral disk
  - ligaments

Lippert, p252

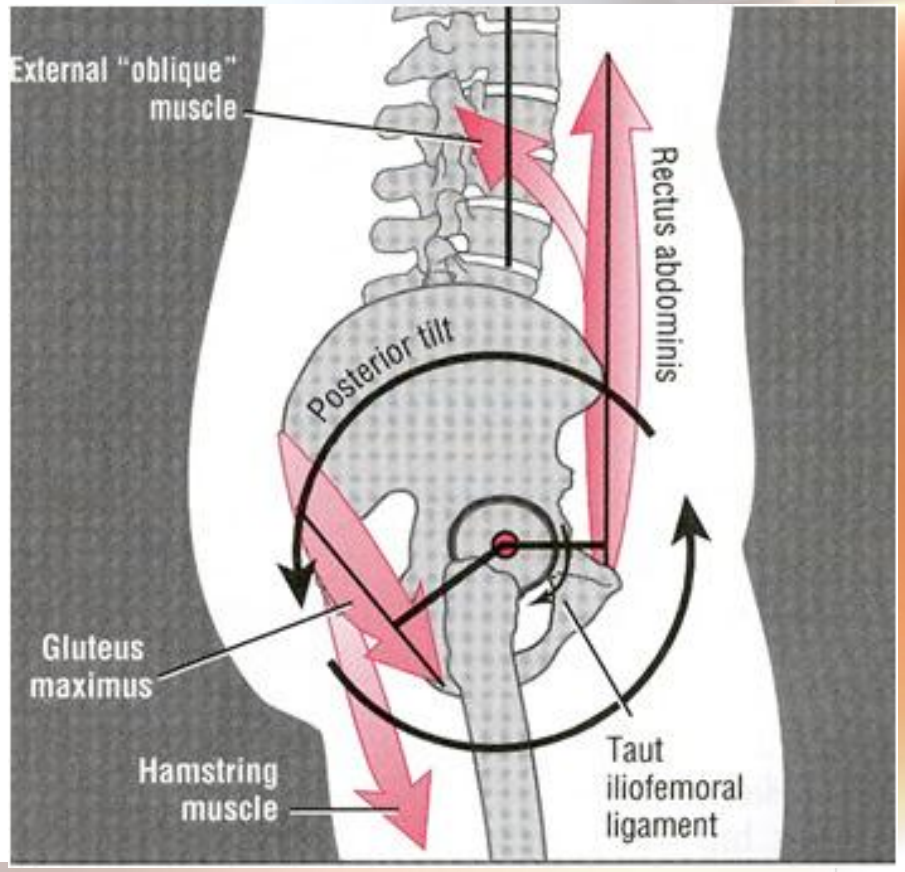
Sagittal Plane Movement: Pelvic Tilt

The position of the pelvis affects the position of the lumbar spine…

Anterior Pelvic Tilt



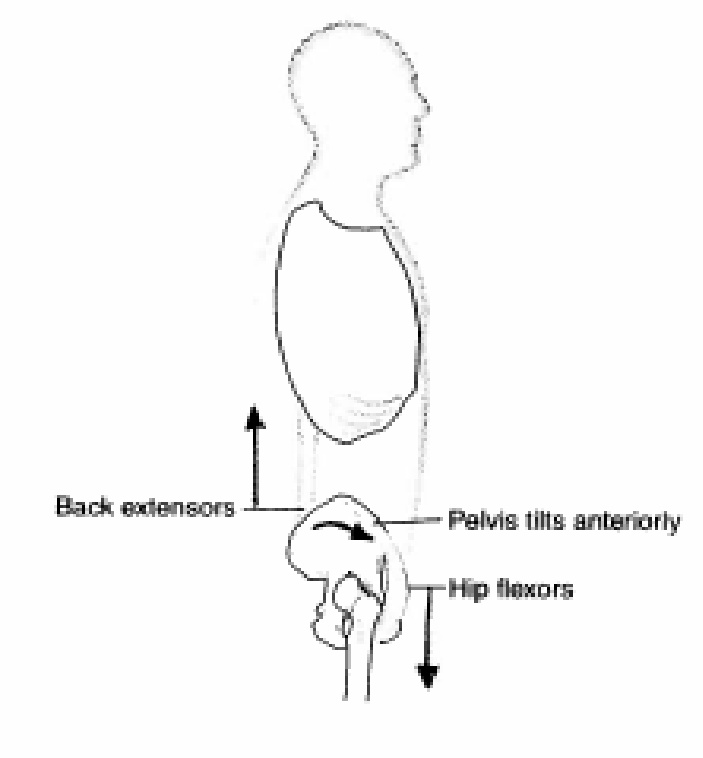
Posterior Pelvic Tilt

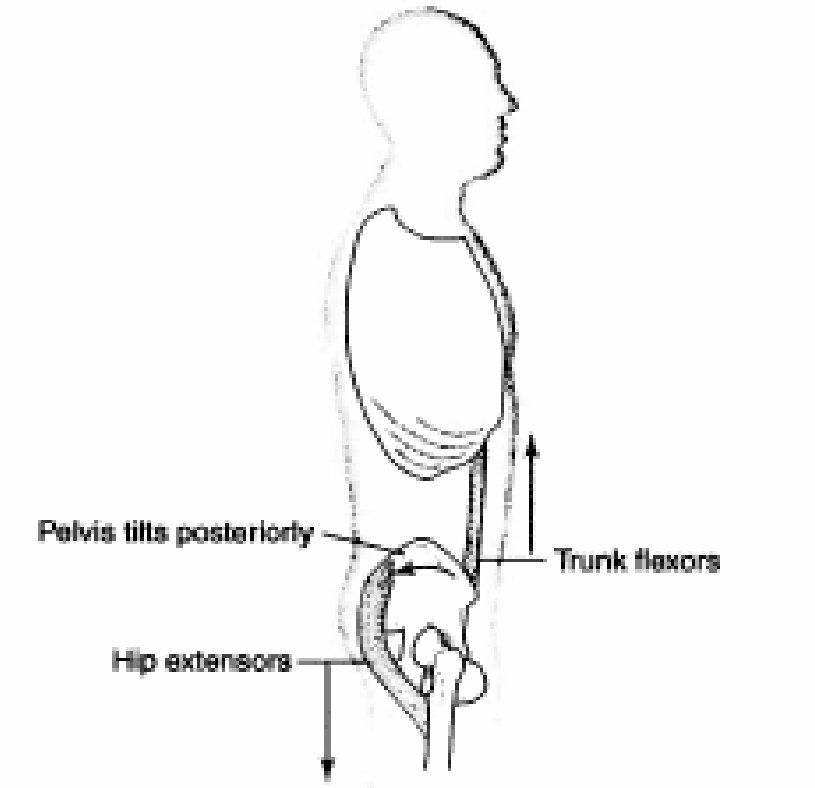


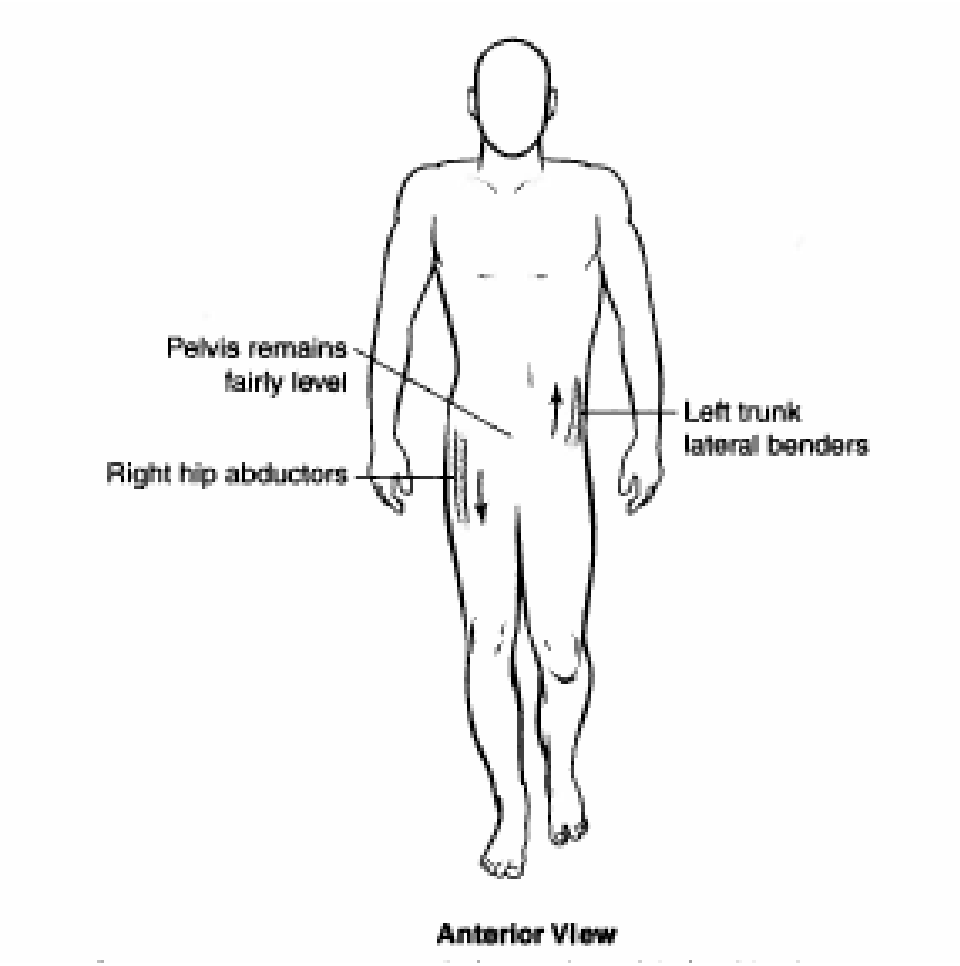
Lippert, p253

Muscle Control

- The pelvis is moved and controlled by groups of muscles acting as force couples.




Pelvis tilts posteriorly
Trunk flexors
Hip extensors


Pelvis remains
fairly level
Left trunk
lateral benders
Right hip abductors
Anterior View

References

- Lippert, L.S. (2011). Clinical Kinesiology and Anatomy, 5th ed. Philadelphia, PA: F.A. Davis.
- Mansfield, P.J., & Neumann, D.A. (2009). Essentials of Kinesiology for the Physical Therapist Assistant. St. Louis, MO: Mosby Elsevier.