- Pelvic bone structure
  - Pelvic girdle: Bony pelvis made up of three structures:
    - Hip bone: fusion of ilium, ischium and pubis
    - Sacrum: Fusion of 5 sacral vertebral columns
    - Coccyx: fusion of ~2 coccyx
  - Function: transfer the weight of the upper body to the legs
  - Connections:
    - Lumbosacral joint: between lumbar vertebrates and sacrum
    - Sacroiliac joint: between sacrum and hip bone
    - Acetabulum: socket joint between hip bone and head of the femur.
    - Pubic symphysis: fibrocartilaginous joint between two hip bones
    - Sacrococcygeal symphysis: joint between sacrum and coccyx
  - Hip bone structure and formation
    - Ilium, ischium and pubis joint by triradiate cartilage, with fusion occuring at around 20-25 yo
    - Ilium is divided to ala and body
    - Three bones joins to form the ball socket acetabulum

- Pelvic compartment:
  - False pelvis: area rostral to the pelvic brim, bound by the ala of the ilium (dorsolateral), and pubis (ventral).
  - True pelvis: area below the pelvic brim, bound by the sacrum and coccyx(dorsal), ichium(lateral), pubis(vental), pelvic diaphragm(caudal)
  - Pelvic brim marks the boundary between abdominal cavity and pelvic cavity. Below the pelvic diaphragm is the perineum.
  - Pelvic inlet boundary: Sacral promotory (posterior, extended bit of the sacral vertebrate), pubic symphysis(anterior), iliopectinal line (lateral)
  - Pelvic outlet boundary: Tip of coccyx(posterior), pubic arch(anterior), Ischial tuberosity & sacraltuberous ligament(lateral)

- Sex differences:
  - Female: wider subpubic angle (thumb and index); Male: narrower angle (index and middle)
  - Female: shorter acetabulum compared to pubic ramus, Male: closer to 1:1 ratio
  - Female: less protrusion into the pelvic outlet; Male: ischial and coccyx protrusions
  - Sciatic notch: wider in females, narrower in males

- Pelvic ligaments:
  - Sacrospinous ligament: between sacrum ischium spine, anterior to the sacrotuberous ligament
  - Sacrotuberuous ligament: sacrum and ischium tubercle
  - Sacrospinous ligament and sacrotuberous ligament across the sciatic notch create greater sciatic foramen.
  - Pudendal nerve exit greater sciatic foramen, reeneter via lesser sciatic foramen, around sacrospinous ligament.

- Pelvic floor diaphragm:
  - Ischiococcygeal: ischial spine - coccyx
  - Leviator ani: consist of four muscles surrounding two hiatus:
    - Puborectalis: U-shaped muscle around the rectum, joins into pubic bone, surround

        - urogenital hiatus: urethra, vagina
        - Anal hiatus: Anus
    - Pubococcygeal: Pubis - coccyx
    - Iliococcygeal: lower lateral margin of ilium - coccyx
  - Innervated by the S4, S5, and pudendal nerve

- Structures in the pelvic cavity:
  - Rectum sits within the true pelvic cavity, with anus passing through the anal hiatus.
  - Upper rectum covered on three sides by peritoneum, middle covered on one side, lower part is below peritoneal cavity.
  - Anterior to posterior: bladder, uterus (in female), rectum.

- anal canal
  - Part below the pectinate line is the lower anal canal, derived from ectoderm
  - Stratified squamous epithelium
  - Somatic innervation by pudendal nerve
  - Blood supply: inferior pudendal artery, inferior pudendal vein (branches of internal iliac artery/vein)
  - Anal sphincter
    - Internal: continuous to gut wall, autonomic innervation, smooth muscle
    - External: merged with leviator ani, skeletal muscle, somatic innervation (inferior rectal nerve, branch from pudendal)
  - Defecation reflex (similar to urination reflex): stretch in anal canal leads to relaxation of internal sphincter, peristalsis of anus. External sphincter contraction can override reflex.
  - Puborectalis muscle controls defecation by constricting the rectum