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Build-A-Pelvis: Modeling Pelvic and Perineal Anatomy

Male Pelvis

Theodore Smith, M.S.

Polly Husmann, Ph.D

Build-A-Pelvis: Male Pelvis

The following activity has been designed to demonstrate the following Session Learning Objectives:

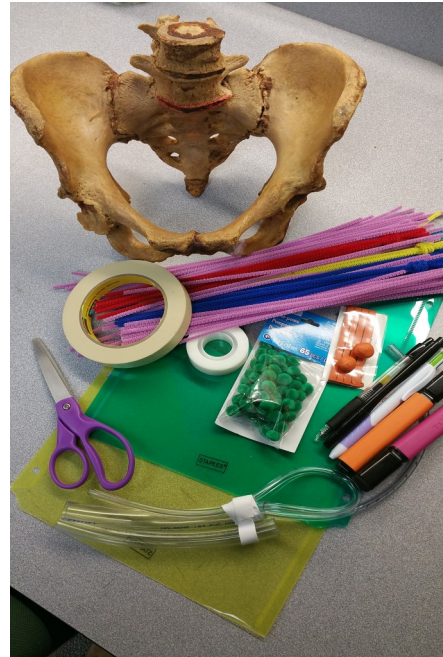
After completing this activity, student will be able to...

- Identify the contents of the superficial and deep pouch of the perineum
- Understand the layering of the perineum
- Understand the 3-Dimensional relationship of structures in the perineum
- Understand the differences between the male and female pelvis

This model was designed to be completed in teams, by individuals, or made before class to use as a reference. Overall, we encourage you to adapt this activity for your classroom as you see fit.

Materials needed:

Pipecleaners-5 different colors
 Plastic Binder Pockets
 Scotch Tape
 Removable Adhesive Tack
 Masking Tape
 Scissors
 Bony Pelvis/Plastic Pelvis Model
 Fuzzy Pom-Poms
 Pens/Markers
 Flexible Plastic Tubing (optional)



Structures Discussed:

Perineal Membrane	Ischiocavernosus Muscle
Anal Triangle	Bulbospongiosus Muscle
Urogenital Diaphragm	Superficial Perineal Pouch
Deep Perineal Pouch	External Anal Sphincter
Superior fascia of the Urogenital Diaphragm	Internal Anal Sphincter*
External Urethral Sphincter	Internal Urethral Sphincter*
Superficial Transverse Perineal muscle	Crura of the penis
Internal pudendal vein	Bulb of the penis
Deep Transverse Perineal Muscle	Bulbourethral glands
Internal pudendal artery	Pudendal nerve
Urethra*	Anal Canal*
Corpora Cavernosa	Corpus Spongiosum
Deep Penile Fascia*	Superficial Penile Fascia*
*only in optional activity with plastic tubing	

Build-A-Pelvis: Male Pelvis Directions

- 1) Begin by cutting 2 triangular pieces (wide isosceles, see Appendix A for templates) of the plastic binder dividers. These will serve as the **perineal membrane (inferior fascia of urogenital diaphragm)** and a boundary for the **anal triangle**. Cut a 3rd smaller triangle from the plastic dividers to serve as the **superior fascia of the urogenital diaphragm**.
- 2) Choose one large triangle to serve as the **perineal membrane**. Place the small triangle in the center of the large triangle and mark 1 spot a few centimeters below the apex of the triangle. At the mark cut 1 hole to represent the **opening for the urethra**. Repeat this step for the smaller triangle.
- 3) Now, on the smaller triangle fill in the structures of **the deep perineal pouch: the external urethral sphincter** represented by a curled red pipecleaner (to be attached by staples or scotch tape), **the bulbourethral glands** represented by fuzzy pom-poms under the masking tape representing **the deep transverse perineal muscle** (See Figure 1).

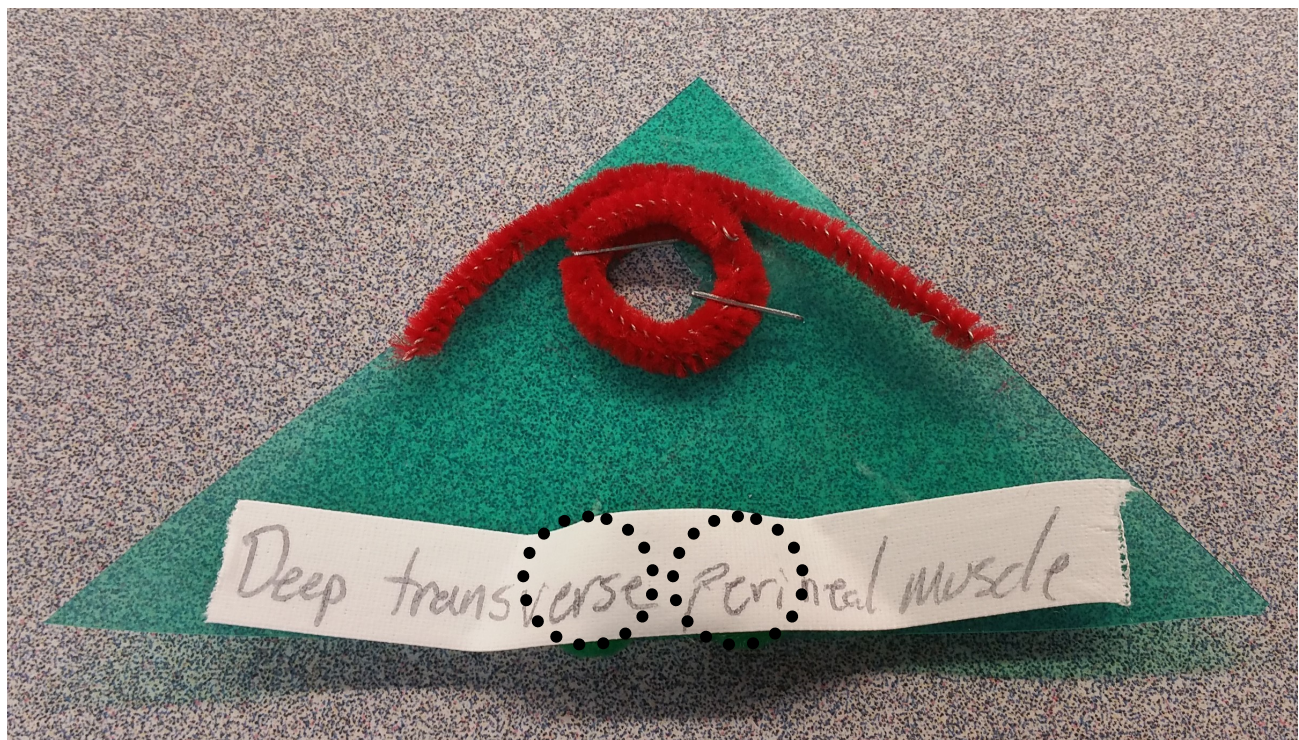


Figure 1. Structures of the Deep Perineal Pouch. The red pipecleaner represents the **external urethral sphincter**. The **Bulbourethral glands** can be found under the **deep transverse perineal muscle** and are highlighted by the circle in the figure.

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- 4) On the **perineal membrane triangle** (Figure 2), fill in the structures of the **superficial perineal pouch**: the **crura of the penis/ corpora cavernosa (B)** and the **bulb of the penis/corpus spongiosum (A)** represented by pipecleaners. The pipecleaners can be organized together without a representation of the urethra to form the erectile tissues of the penis. For further instructions on formation of the penis, see the optional instructions at the end of this packet. The **ischiocavernosus (D)** and **bulbospongiosus (C)** and **superficial transverse (E) muscles** represented by the masking tape (See Figure 2).

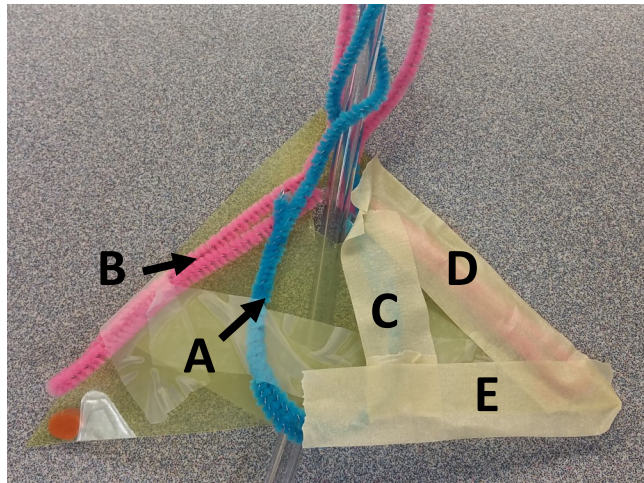


Figure 2. Structures of the **Superficial Perineal Pouch**. Structures include: A) **Bulb of the Penis**, B) **Crus of the Penis**, C) **Bulbospongiosus muscle**, D) **Ischiocavernosus muscle**, E) **Superficial Transverse Perineal Muscle**

- 5) On the final large triangle, cut a hole in the center to represent an opening for the anal canal. Use masking tape to represent the **external anal sphincter** (See Figure 3 for the completed structure).
- 6) Cut the **pelvic diaphragm** from plastic binder divider using the template in Appendix B.

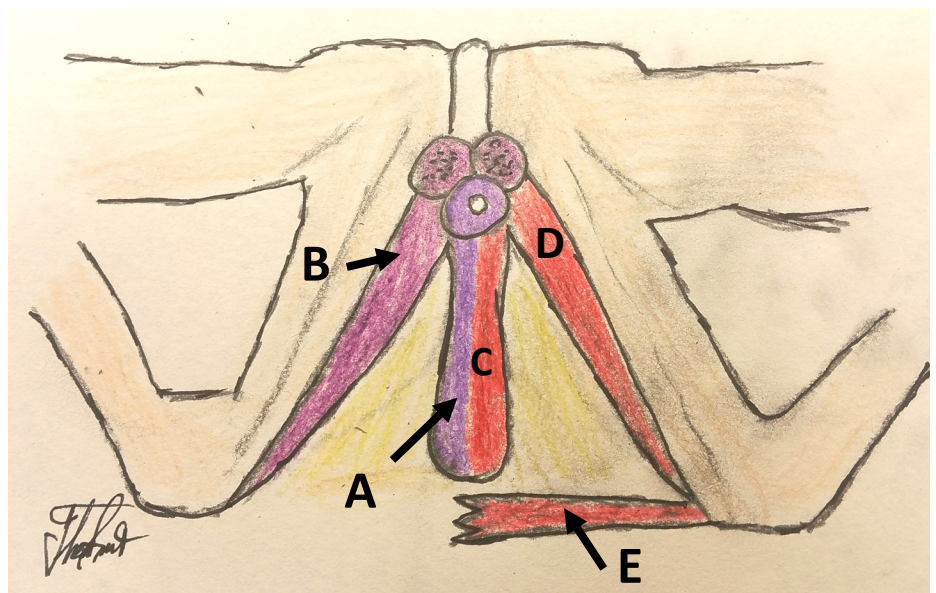


Figure 2. Structures of the **Superficial Perineal Pouch**. Structures include: A) **Bulb of the Penis**, B) **Crus of the Penis**, C) **Bulbospongiosus muscle**, D) **Ischiocavernosus muscle**, E) **Superficial Transverse Perineal Muscle**

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- 7) By sticking a small ball of adhesive tack on each corner of the **superior fascia of the urogenital diaphragm** triangle, place the triangle on the posterior aspect of the inferior pubic ramus and point on the posterior aspect of the pubic symphysis (See Figure 4).
- 8) Now place the **anal triangle** in its anatomical position by attaching it to the tip of the coccyx and the ischial tuberosity (See Figure 5).

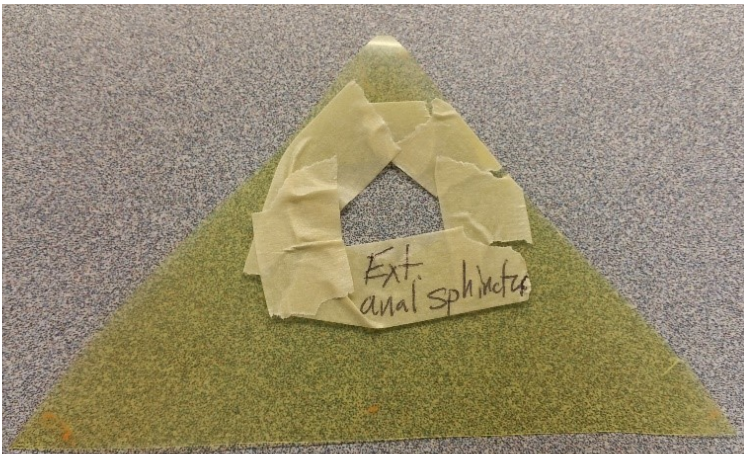


Figure 3. Structures of the **Anal Triangle**.

Figure 4. Placement of the **Superior Fascia of the Urogenital Diaphragm**.



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- 9) Place the **perineal membrane** triangle on the pelvis by attaching its base to the ischial tuberosities and its point near the anterior aspect of the pubic symphysis (See Figure 6).
- 10) The **pelvic diaphragm** can now be added by sliding it through the pelvic inlet until it rests in a cone shape within the pelvis (See Figure 7).
- 11) Now take 3 different colored pipecleaners to represent **the internal pudendal vessels** and **the pudendal nerve** and anchor them in a path around the ischial spine and into the deep pouch (Figure 8).



Figure 5. Placement of the **Anal Triangle**.



Figure 6. Placement of the **Perineal Membrane**.

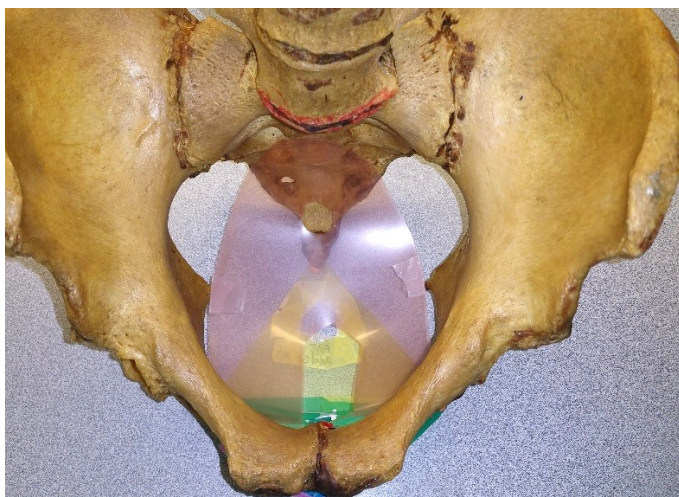


Figure 7. Placement of the **Pelvic Diaphragm**.



Figure 8. Placement of the **Pudendal Vessels and Nerve**.

Build-A-Pelvis: Male Pelvis Directions

Optional activity:

- 1) Use 2 flexible tubes (1 large and 1 small) to represent the **urethra** and **rectum/anal canal**.
- 2) Take the small tube, representing the **urethra**, and thread one end of the tube through the openings in the triangle for the **superior and inferior fascia of the urogenital diaphragm**. Wrap a red pipecleaner around the other end of the small tube creating a circle around the tube. Then push the red pipecleaner down to tube until it is just superior to the **superior fascia of the urogenital diaphragm**. This will represent the internal urethral sphincter (Figure 9). At the penile urethra end of the tube, wrap the **corpus spongiosum/root of penis** pipecleaners around the urethra. Place the **crura of the penis/corpora cavernosa** pipecleaners on the dorsal part of the urethra tube. Use scotch tape (thus representing the **deep penile fascia**) to hold the pipecleaners to the tube. Figure 2 shows this representation. Add a large tube/tape around the structure as a whole to represent the **superficial penile fascia**. See Figure 6 for this completed structure.
- 3) Take the large tube and thread it through the opening for the anal canal. To represent the internal anal sphincter, wrap a red pipecleaner around the open end of the tube and push it down towards the other end of the tube (Figure 10)



Figure 10. Placement of the **Urethra, Internal Urethral Sphincter** (red pipecleaner), **Anal Canal/Rectum**, and **Internal Anal Sphincter**

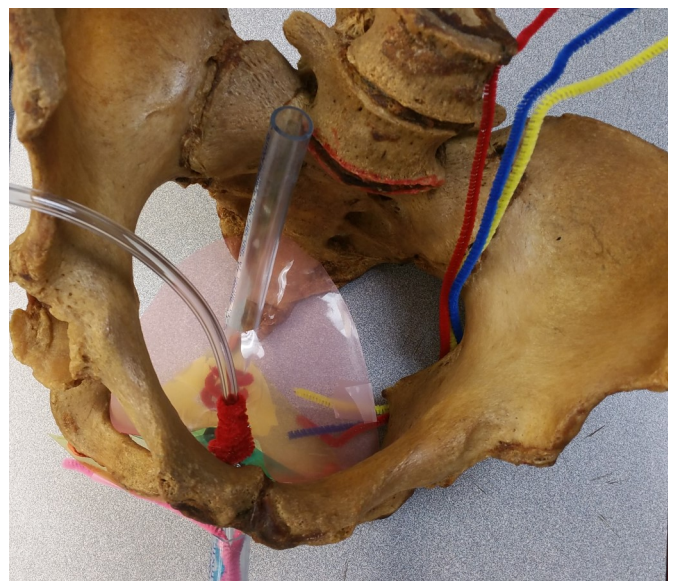


Figure 9. Placement of the **Urethra, Internal Urethral Sphincter** (red pipecleaner), **Anal Canal/Rectum**, and **Internal Anal Sphincter**

Build-A-Pelvis: Male Pelvis Directions

“Build-A-Pelvis” Review Quiz-Male

Using your new pelvis model, answer the following questions:

1) The bulb of the penis is __**deep**__ in relation to the bulbospongiosus muscle.

2) The bulbourethral glands lie in which perineal pouch?

Deep perineal pouch

3) The bulb of the penis is __**medial**__ in relation to the crura of the penis.

4) The external urethral orifice is ____**anterior and superficial**____ in relation to the bulbourethral glands.

5) The crura of the penis will form what structure(s) in the penis shaft?

Corpora cavernosa

6) The bulb of the penis will form what structure(s) in the penis shaft?

Corpus spongiosum

7) The bulbourethral glands are enclosed by what structure?

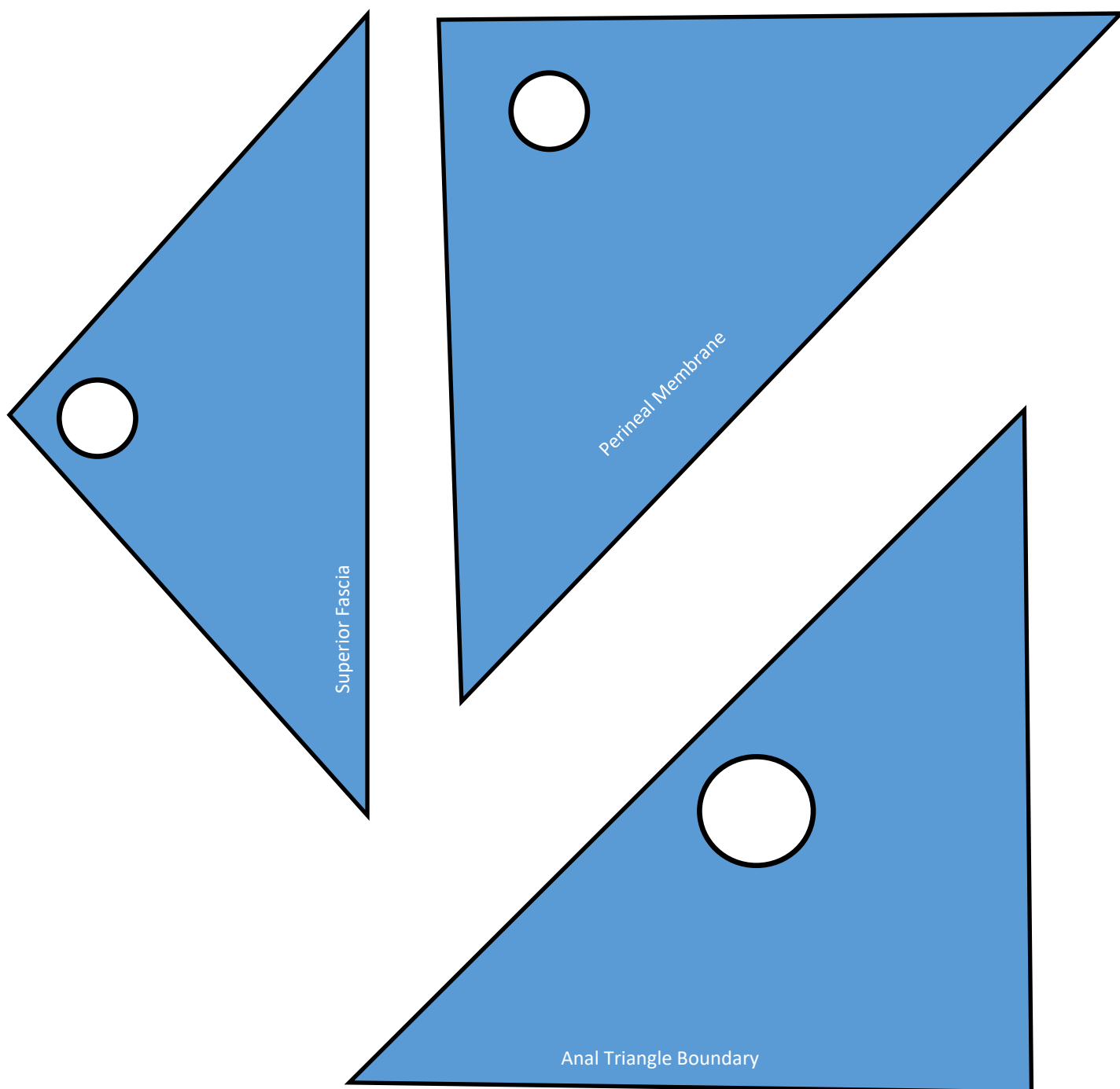
Deep transverse perineal muscle

8) The external urethral sphincter is in what perineal pouch?

Deep perineal pouch

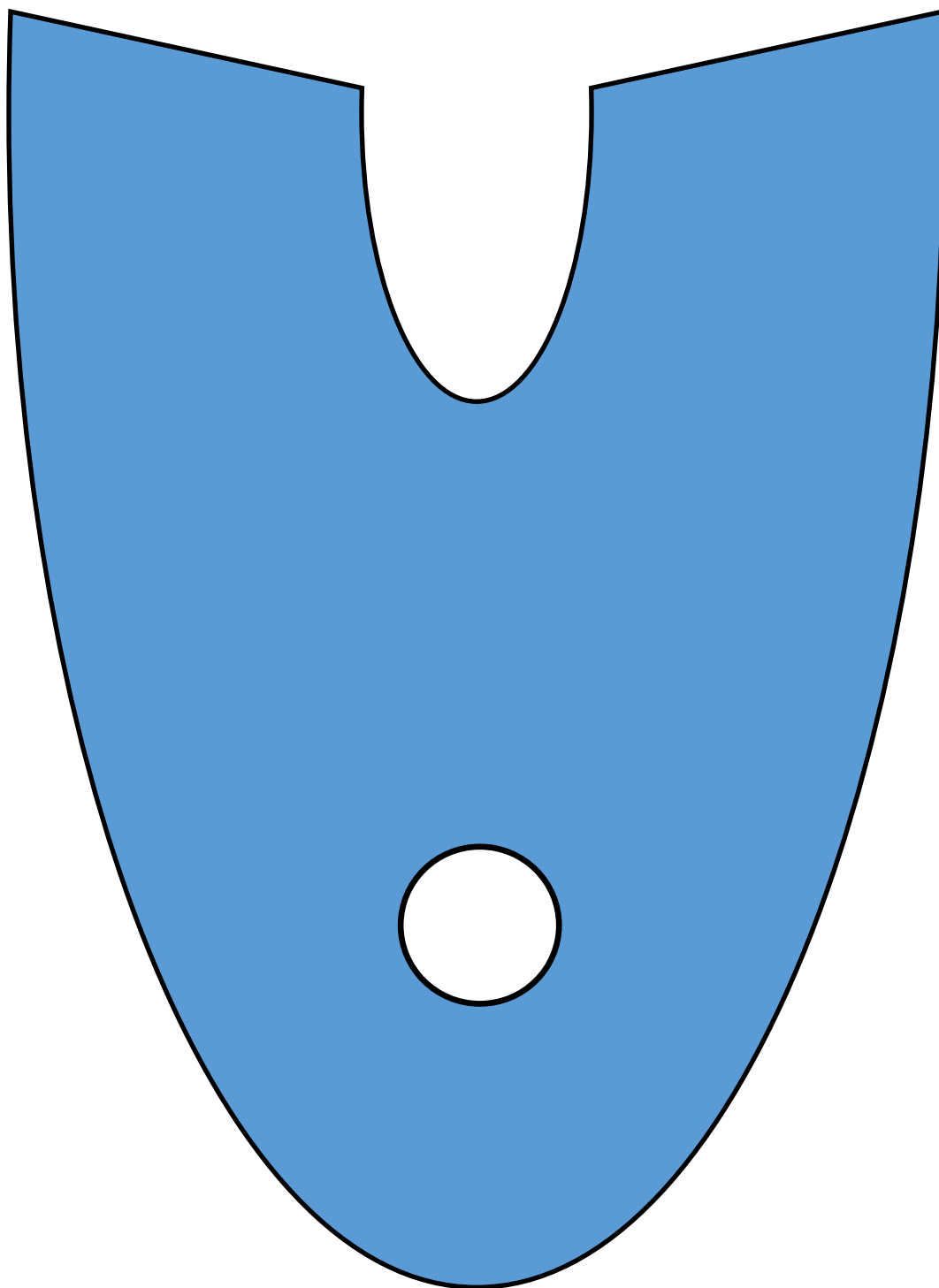
Build-A-Pelvis: Male Pelvis Directions

**Appendix A: Templates for Perineal Membrane, Anal Triangle Boundary,
and Superior Fascia of Urogenital Diaphragm**



Build-A-Pelvis: Male Pelvis Directions

Appendix B: Template for the Pelvic Diaphragm



Build-A-Pelvis: Male Pelvis Directions

The following texts were used in reference in the making of this activity:

Moore, K. L., Dalley, A. F., & Agur, A. M. R. (2014). *Clinically Oriented Anatomy* (7th ed.). Lippincott Williams & Wilkins.

Gilroy, A. M., MacPherson, B. R., Schuenke, M., Schulte, E., Schumacher, U., Voll, M., & Wesker, K. (Eds.). (2016). *Atlas of Anatomy* (3rd ed.).