Laboratory Exercise 22

Muscles of the Deep Back, Abdominal Wall, and Pelvic Outlet

Materials Needed

Textbook
Human torso model with musculature
Human skeleton, articulated
Muscular models of male and female pelves

The deep muscles of the back extend the vertebral column. Because the muscles have numerous origins, insertions, and subgroups, the muscles overlap each other. The deep back muscles can extend the spine when contracting as a group but also help to maintain posture and normal spine curvatures.

The anterior and lateral walls of the abdomen contain broad, flattened muscles arranged in layers. These muscles connect the rib cage and vertebral column to the pelvic girdle. The abdominal wall muscles compress the abdominal visceral organs, help maintain posture, assist in forceful exhalation, and contribute to trunk flexion and waist rotation.

The muscles of the pelvic outlet are arranged in two muscular sheets: (1) a deeper pelvic diaphragm that forms the floor of the pelvic cavity and (2) a urogenital diaphragm that fills the space within the pubic arch. The pelvic floor is penetrated by the urethra, vagina, and anus in a female, and thus are important in obstetrics.

Purpose of the Exercise

To review the actions, origins, and insertions of the muscles of the deep back, abdominal wall, and pelvic outlet.

LEARNING OUTCOMES

After completing this exercise, you should be able to

1. Locate and identify the muscles of the deep back, abdominal wall, and pelvic outlet.
2. Describe the action of each of these muscles.
3. Locate the origin and insertion of each of these muscles in a human skeleton or on muscular models.

EXPLORE

Procedure A—Muscles of the Deep Back and Abdominal Wall

1. Review the section entitled "Muscles of the Abdominal Wall" in chapter 9 of the textbook.
2. As a review activity, label figures 22.1 and 22.2.
3. Locate the following muscles in the human torso model:

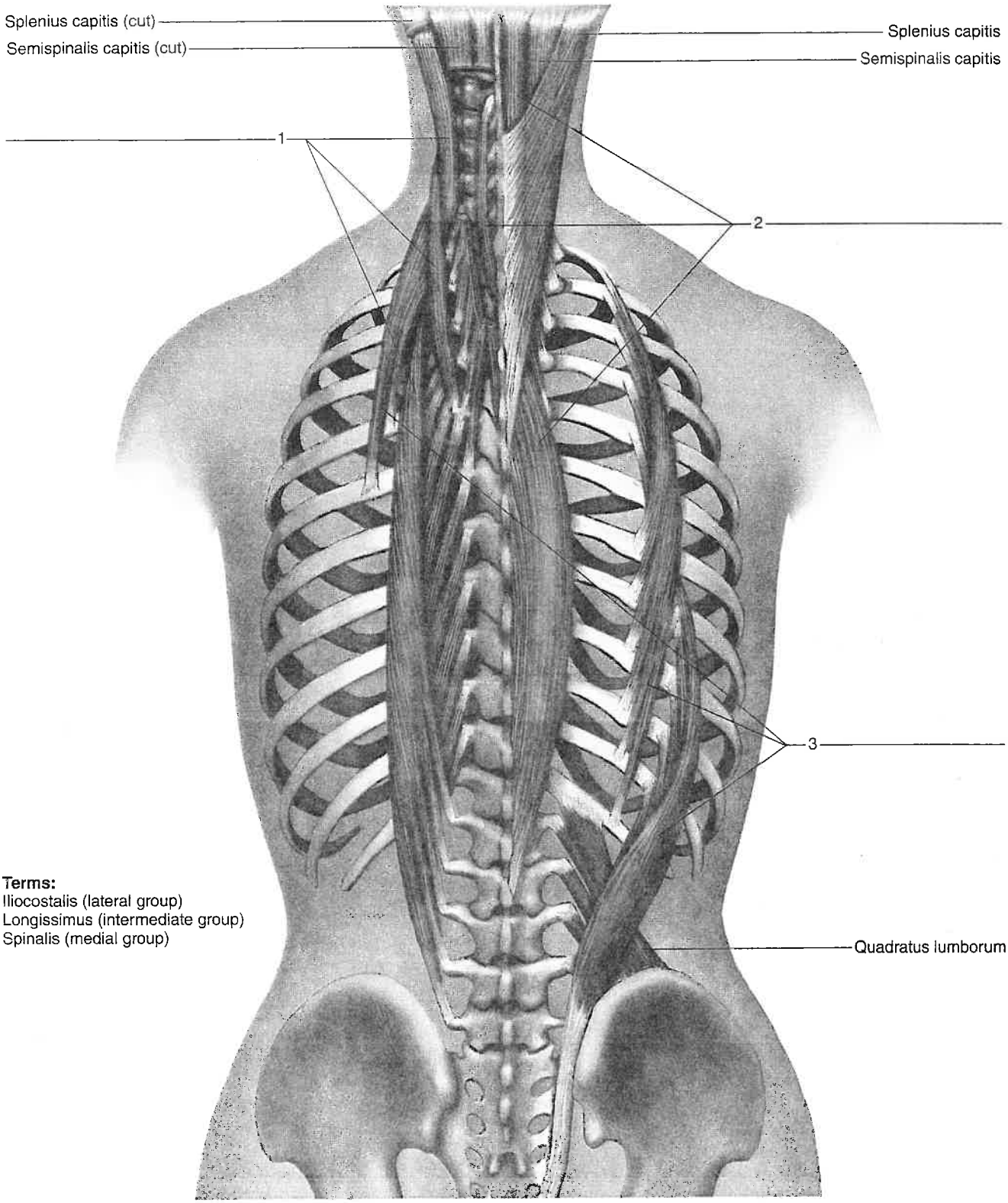
erector spinae group
- iliocostalis (lateral group)
- longissimus (intermediate group)
- spinalis (medial group)

external oblique
internal oblique
transversus abdominis
rectus abdominis

4. Demonstrate the actions of these muscles in your body. 2
5. Locate the origin and insertion of each of these muscles in the human skeleton. 3
6. Complete Part A of Laboratory Report 22.

Critical Thinking Application

List the muscles from superficial to deep for an appendectomy incision. 1



Terms:
Iliocostalis (lateral group)
Longissimus (intermediate group)
Spinalis (medial group)

Figure 22.1 Label the three deep back muscle groups of the erector spinae group, using the terms provided. (*Note:* The three erector spinae muscle groups are not illustrated on both sides of the body.) A

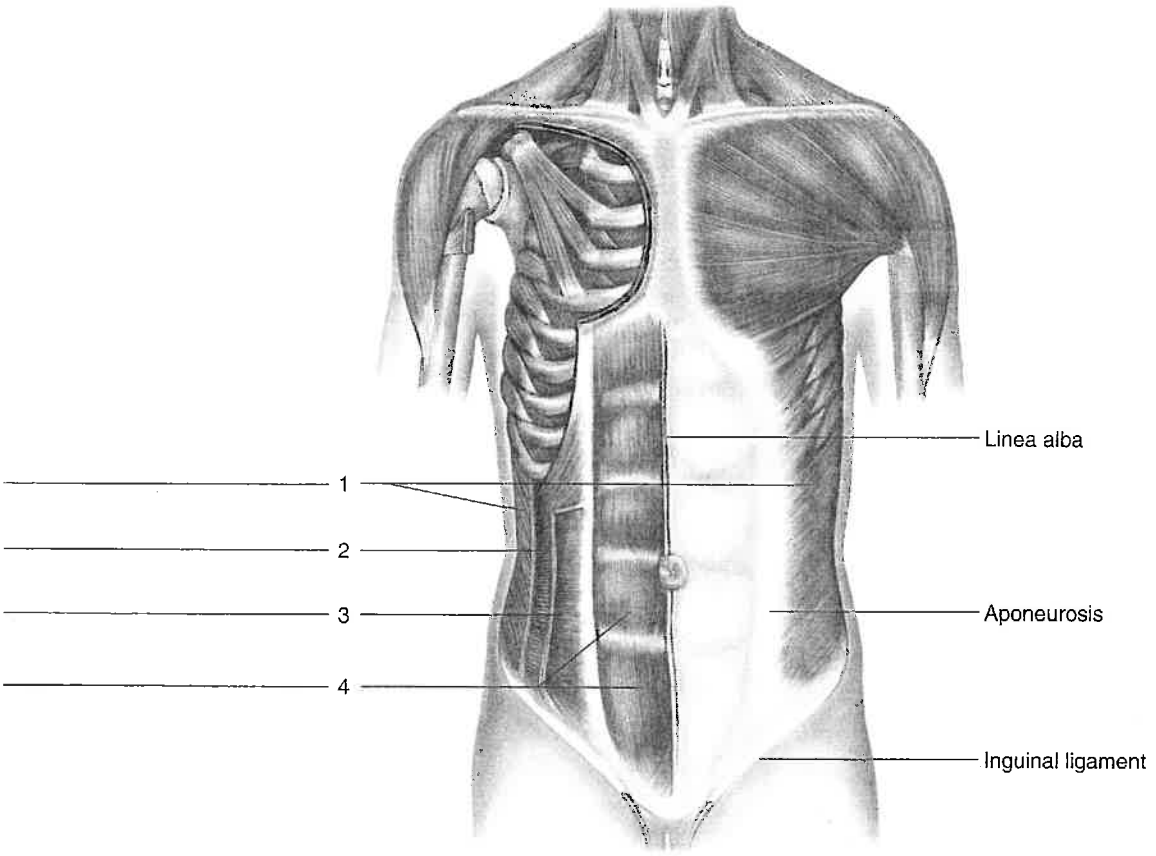


Figure 22.2 Label the muscles of the abdominal wall. 1

EXPLORE

Procedure B—Muscles of the Pelvic Outlet

1. Review the section entitled "Muscles of the Pelvic Outlet" in chapter 9 of the textbook.
2. As a review activity, label figures 22.3 and 22.4.
3. Locate the following muscles in the models of the male and female pelves:

   levator ani
   coccygeus
   superficial transversus perinei
   bulbospongiosus
   ischiocavernosus

4. Locate the origin and insertion of each of these muscles in the human skeleton. 3
5. Complete Part B of the laboratory report.

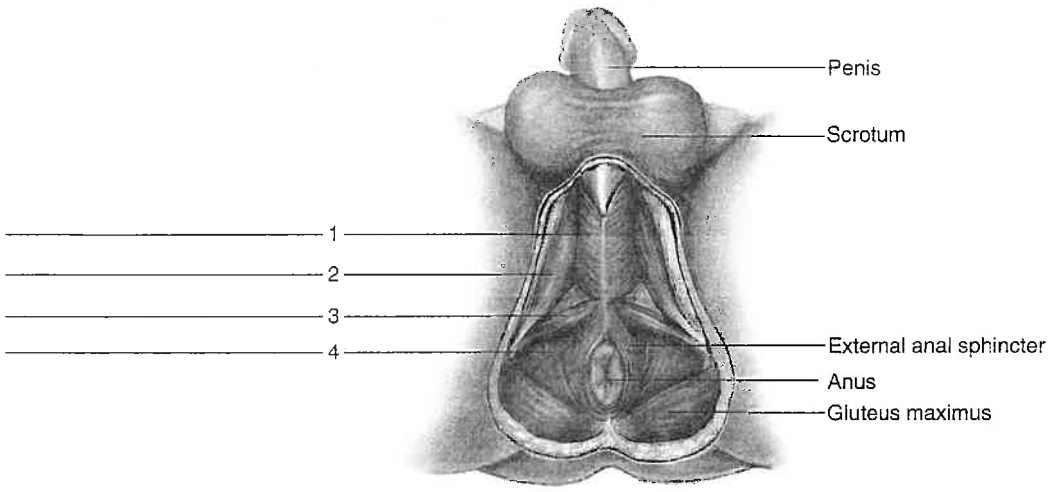


Figure 22.3 Label the muscles of the male pelvic outlet. A1

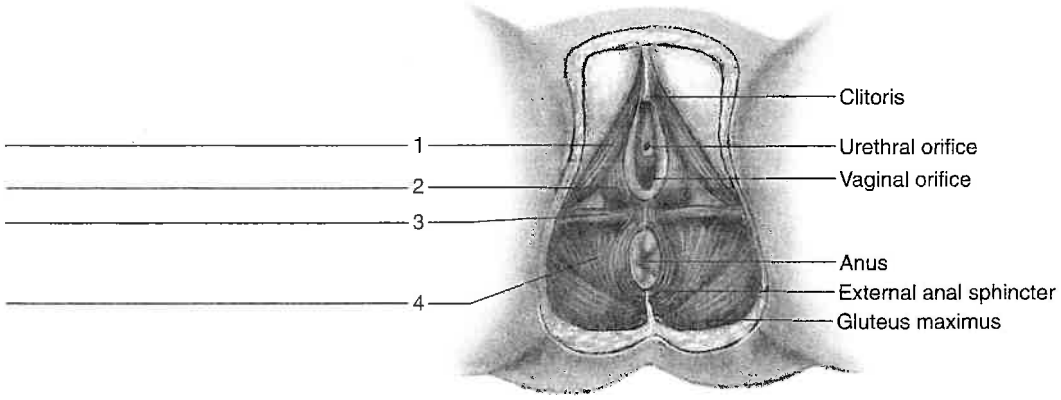


Figure 22.4 Label the muscles of the female pelvic outlet. A1