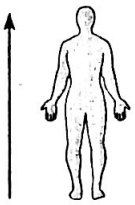
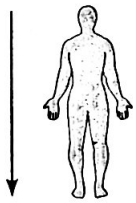
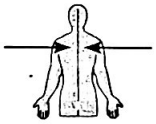
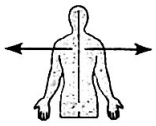
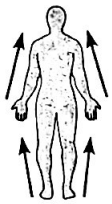
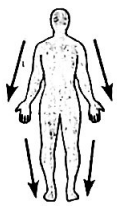
Table 1.1 Orientational Directional Terms

Term	Definition	Illustration	Example
Superior (cranial or cephalad)	Toward the head end or upper part of a structure or the body; above		The forehead is superior to the nose.
Inferior (caudal)*	Away from the head end or toward the lower part of a structure or the body; below		The navel is inferior to the breastbone.
Ventral (anterior)†	Toward or at the front of the body; in front of		The breastbone is anterior to the spine.
Dorsal (posterior)†	Toward or at the backside of the body; behind		The heart is posterior to the breastbone.
Medial	Toward or at the midline of the body; on the inner side of		The heart is medial to the arm.
Lateral	Away from the midline of the body; on the outer side of		The arms are lateral to the chest.
Intermediate	Between a more medial and a more lateral structure		The collarbone is intermediate between the breastbone and the shoulder.
Proximal	Close to the origin of the body part or the point of attachment of a limb to the body trunk		The elbow is proximal to the wrist (meaning that the elbow is closer to the shoulder or attachment point of the arm than the wrist is).
Distal	Farther from the origin of a body part or the point of attachment of a limb to the body trunk		The knee is distal to the thigh.
Superficial (external)	Toward or at the body surface		The skin is superficial to the skeleton.
Deep (internal)	Away from the body surface; more internal		The lungs are deep to the rib cage.

*The term *caudal*, literally "toward the tail," is synonymous with *inferior* only to the inferior end of the spine.
†*Ventral* and *anterior* are synonymous in humans; this is not the case in four-legged animals. *Ventral* refers to the "belly" of an animal and thus is the inferior surface of four-legged animals. Likewise, although the dorsal and posterior surfaces are the same in humans, the term *dorsal* refers to an animal's back. Thus, the dorsal surface of four-legged animals is their superior surface.

Q • *Study this figure for a moment to answer these two questions. Where would you hurt if you (1) pulled a groin muscle or (2) cracked a bone in your olecranal area?*

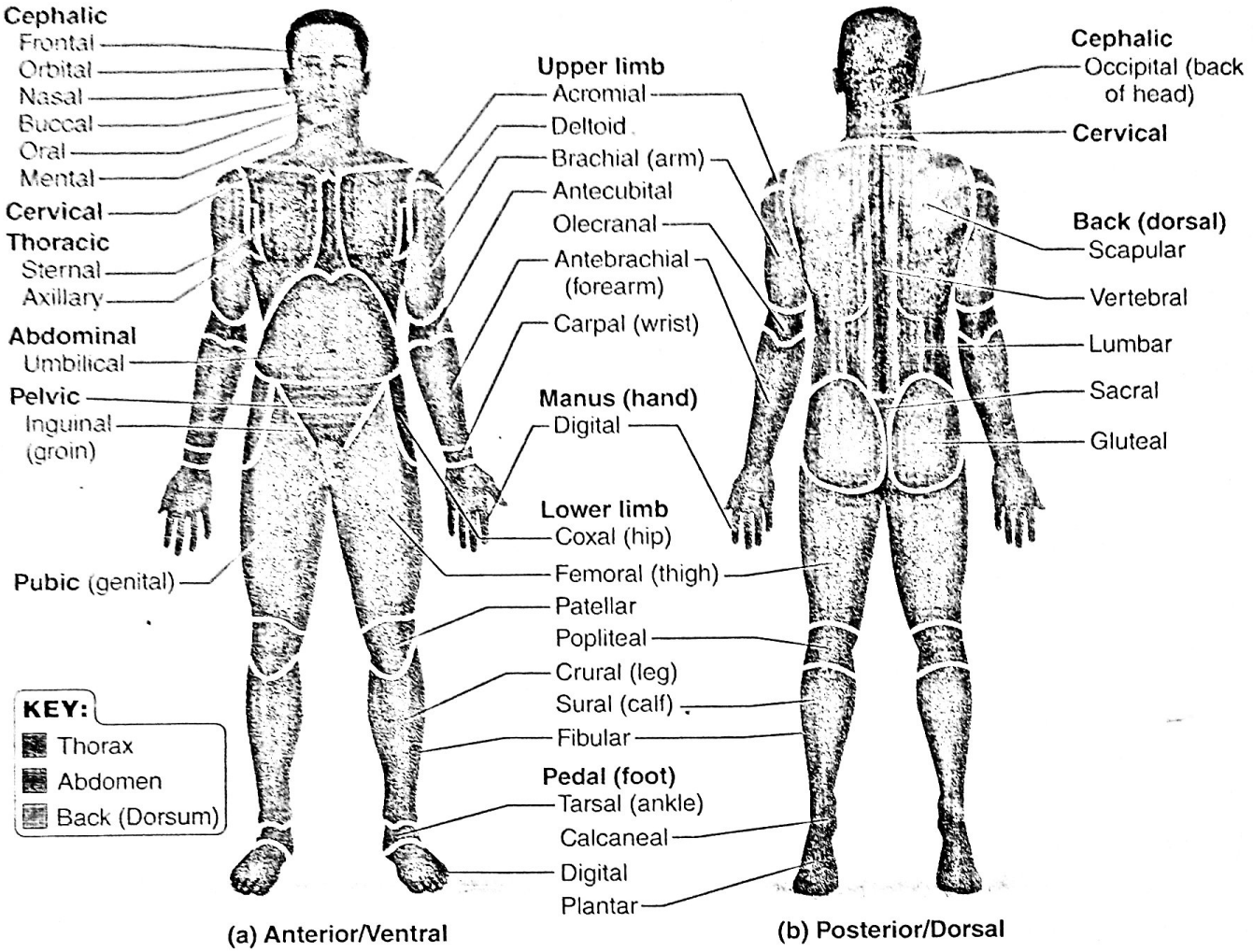


Figure 1.5 **Regional terms used to designate specific body areas.** (a) The anatomical position. (b) The heels are raised slightly to show the inferior plantar surface (sole) of the foot, which is actually on the inferior surface of the body.

Practice art labeling
MasteringA&P*>Study Area> Chapter 1

Anterior Body Landmarks

Look at the figure (Figure 1.5a) to find the following body regions. Once you have identified all the anterior body landmarks, cover the labels that describe what the structures are. Then go through the list again, pointing out these areas on your own body.

- **abdominal** (ab-dom′ĭ-nal): anterior body trunk inferior to ribs
- **acromial** (ah-kro′me-ul): point of shoulder
- **antebrachial** (an″te-bra′ke-ul): forearm
- **antecubital** (an″te-ku′bĭ-tal): anterior surface of elbow
- **axillary** (ak′sĭ-lar″e): armpit
- **brachial** (bra′ke-al): arm
- **buccal** (buk′al): cheek area
- **carpal** (kar′pal): wrist
- **cervical** (ser′vĭ-kal): neck region
- **coxal** (kox′al): hip
- **crural** (kroo′ral): leg

A: (1) Your inguinal area. (2) Your posterior elbow region.

- **deltoid** (del'toyd): curve of shoulder formed by large deltoid muscle
- **digital** (dij'ĭ-tal): fingers, toes
- **femoral** (fem'or-al): thigh
- **fibular** (fib'u-lar): lateral part of leg
- **frontal** (frun'tal): forehead
- **inguinal** (in'gwĭ-nal): area where thigh meets body trunk; groin
- **mental** (men'tul): chin
- **nasal** (na'zul): nose area
- **oral** (o'ral): mouth
- **orbital** (or'bĭ-tal): eye area
- **patellar** (pah-tel'er): anterior knee
- **pelvic** (pel'vik): area overlying the pelvis anteriorly
- **pubic** (pu'bik): genital region
- **sternal** (ster'nul): breastbone area
- **tarsal** (tar'sal): ankle region
- **thoracic** (tho-ras'ik): chest
- **umbilical** (um-bil'ĭ-kal): navel

Posterior Body Landmarks

Identify the following body regions in the figure (Figure 1.5b), and then locate them on yourself without referring to this text.

- **calcaneal** (kal-ka'ne-ul): heel of foot
- **cephalic** (seh-fā'lik): head
- **femoral** (fem'or-al): thigh
- **gluteal** (gloo'te-al): buttock
- **lumbar** (lum'bar): area of back between ribs and hips; the loin
- **occipital** (ok-sip'ĭ-tal): posterior surface of head or base of skull
- **olecranal** (ol-eh-cra'nel): posterior surface of elbow
- **popliteal** (pop-lit'e-al): posterior knee area
- **sacral** (sa'krul): area between hips
- **scapular** (skap'u-lar): shoulder blade region
- **sural** (soo'ral): the posterior surface of leg; the calf
- **vertebral** (ver'tĕ-bral): area of spinal column

The **plantar** region, or the sole of the foot, actually on the inferior body surface, is illustrated along with the posterior body landmarks (see Figure 1.5b).

Did You Get It?

9. *What is the anatomical position, and why is it important that an anatomy student understand it?*
10. *The axillary and the acromial areas are both in the general area of the shoulder. To what specific body area does each of these terms apply?*

(For answers, see Appendix D.)

Body Planes and Sections

When preparing to look at the internal structures of the body, medical students make a **section,** or cut. When the section is made through the body wall or through an organ, it is made along an imaginary line called a **plane.** Because the body is three-dimensional, we can refer to three types of planes or sections that lie at right angles to one another (Figure 1.6, p. 18).

A **sagittal** (saj'ĭ-tal) **section** is a cut along the lengthwise, or longitudinal, plane of the body, dividing the body into right and left parts. If the cut is down the median plane of the body and the right and left parts are equal in size, it is called a **median (midsagittal) section.** All other sagittal sections are parasagittal sections (para = near).

A **frontal section** is a cut along a lengthwise plane that divides the body (or an organ) into anterior and posterior parts. It is also called a **coronal** (ko-ro'nal, "crown") **section.**

A **transverse section** is a cut along a horizontal plane, dividing the body or organ into superior and inferior parts. It is also called a **cross section.**

Sectioning a body or one of its organs along different planes often results in very different views. For example, a transverse section of the body trunk at the level of the kidneys would show kidney structure in cross section very nicely; a frontal section of the body trunk would show a different view of kidney anatomy; and a midsagittal section would miss the kidneys completely. Information on body organ positioning can be gained by taking magnetic resonance imaging (MRI) scans along different body planes (Figure 1.6). MRI scans are described further in "A Closer Look" (pp. 10–11).

Q: *Which section type would separate the two eyes?*

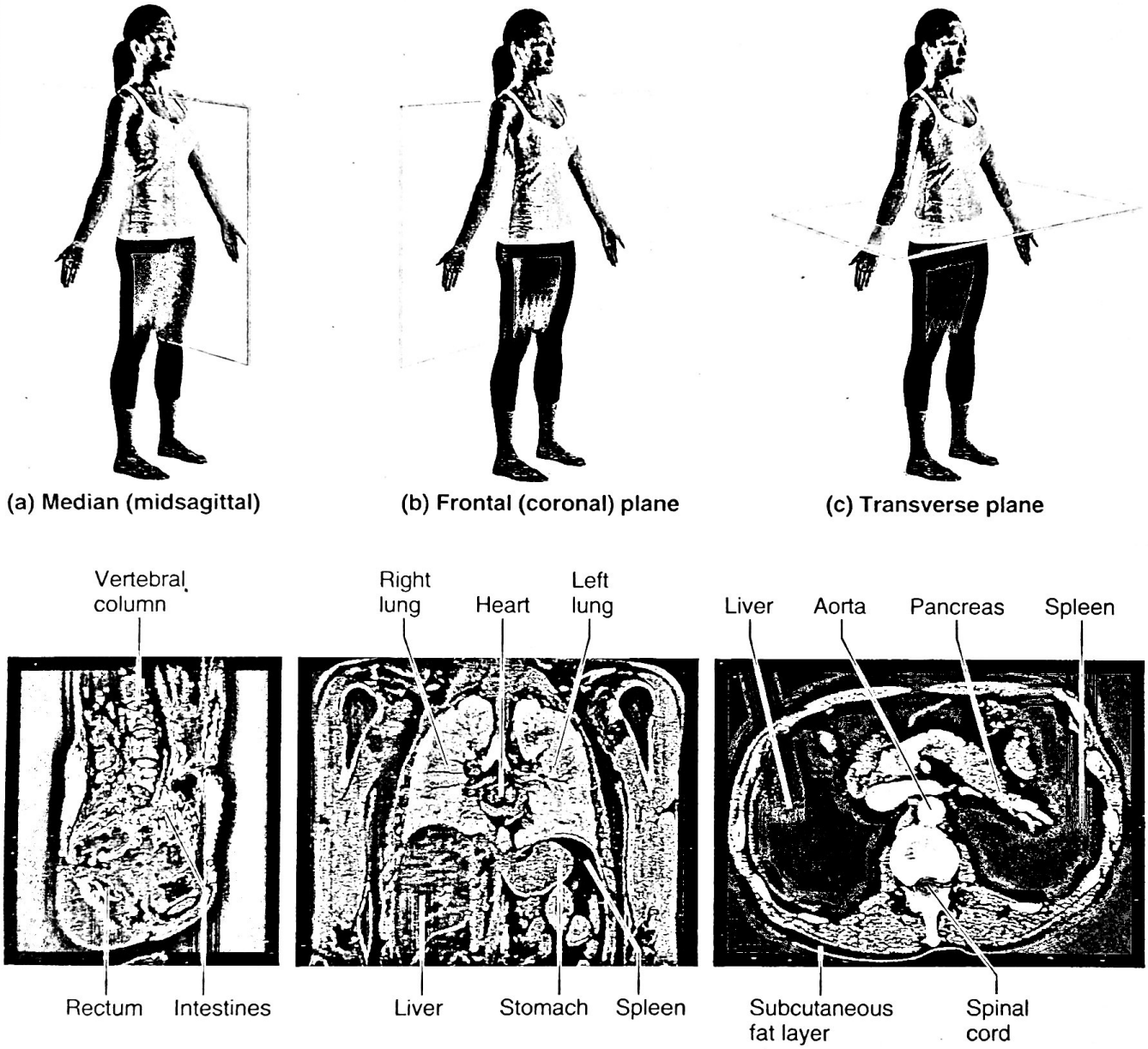


Figure 1.6 The anatomical position and planes of the body—median, frontal, and transverse with corresponding MRI scans.

Body Cavities

Anatomy and physiology textbooks typically describe two sets of internal body cavities, called the dorsal and ventral body cavities, that provide different degrees of protection to the organs within them (Figure 1.7). Because these cavities differ in their mode of embryological development and in their lining membranes, many anatomy reference books do not identify the dorsal, or neural, body cavity as an internal body cavity. However, the idea of two major sets of internal body cavities is a useful learning concept, so we will continue to use it here.

A: A midsagittal section would separate the two eyes.