Massage Therapy

Instruction Pack 3 Lessons **10-14**

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Massage Therapy

Instruction Pack 3

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Answer Key

Lesson 10
Movement and Support II—The Forearm and Hand

Step 1 Learning Objectives

- ❑ After completing this lesson, you will be trained to do the following:
  - Identify landmarks, bones, joints and muscles of the forearm and hand, including their locations respective to each other.
  - Explain the functional relationships among bones, joints and muscles of the forearm and hand.
  - Describe the movements of bones, joints and muscles of the forearm and hand, using appropriate terminology.
  - Identify origins and insertions of the forearm and hand muscle groups.
  - Discuss range of motion (ROM) as it pertains to the forearm and hand, and identify ideal ROM for the related joints. Locate and palpate (touch) primary bones, joints and muscles of the forearm and hand on your own or your "client's" body.

Step 2 Lesson Preview

- ❑ Welcome back! You're now more than a third of the way through the textbook portion of the course, and you're building a solid foundation of knowledge and skills for your work as a massage therapist. You've begun identifying and palpating significant bones and muscles of the shoulder and arm, and practicing basic Swedish massage techniques. In this lesson, you'll complete your introduction to the upper limb by adding the bones, landmarks, joints and muscles of the forearm and hand to what you know.

This lesson will teach you about specific muscles, bones and joints of the forearm and hand.

This introduction to the forearm and hand is a little different from our introduction to the arm. First, you'll see how much Latin and Greek you already know and how you can build on that knowledge to learn new anatomical terms much more easily. Second, we will discuss a number of forearm and hand muscles in terms of their group actions rather than their individual names.

You'll want to review Lesson 7, "Movement and Support I—The Shoulder Girdle and Arm," briefly first, so you're well "armed" to learn about the forearm and hand.

🕮 Step 3 Terminology—It's Latin (or Greek) to Me

- ❑ If you speak only one language and that language is English, you might be surprised to learn how many pieces of other languages you know. Consider these three words: *flex*, *minimum*, *manual*. You probably have an idea of what they all mean, don't you? We talked about *flexion* in previous lessons as bending or decreasing the angle of a joint; *minimum* means *least* or *smallest amount*; and *manual* means *physical* or, more literally, *by hand*. Did you know that all these words are forms of Latin words? You'll see these Latin roots again in some of the anatomical terms related to the forearm and wrist.

  Take a look at more of the anatomical terms for this part of the body and see how many you can figure out based on English words you already know.

Puzzling It Out—You Know More Than You Think

Look at the list of words and roots in the left column on the following form, and take a guess at any meanings they suggest to you (put your ideas down beside each word). For example, look at the word *palmaris*. You can see the smaller word *palm* contained in that term—and you certainly know what and where the palm of your hand is. Okay. Now see what you can do with the rest of the words (and if you don't know them all, don't worry—we'll give some clues to help you remember the less obvious ones, too).

bi- _____

brachial _____

brevis _____

carpi _____

-ceps _____

digit _____

extensor _____

flex _____

longus _____

manus _____

minimi _____

palmaris _____

pollex _____

pollicis _____

profundus _____

radialis _____

superficialis _____

tri- _____

ulnaris _____

Now look at the same words in Table 10-1, together with their definitions, and see how many you knew something about already, even if you had never seen them before. (Notice that the original meanings of the terms come from Latin and Greek.) Study these terms until you feel comfortable with what they mean.

Table 10-1: Forearm and Hand: Anatomical Terms and Meanings	
Term	**Anatomical Association**
bi-	meaning "two"; bi-headed muscles (e.g., biceps) are muscles that have two distinct origins and one insertion
brachial	relating to the arm (think of "breakee" the arm)
brevis	short
carpi	pertaining to the wrist
-ceps	meaning "head"; used in reference to muscles that have more than one head or distinct point of origin (e.g., biceps, triceps)
digit	finger (think of *digit* meaning *number*, and you have "a number of fingers")
extensor	to extend, as in the movement of extension
flex	to bend
longus	longer
manus	hand (as in "manual")
minimi	smaller (as in "minimum" or "least")
palmaris	having to do with the palm
pollex	thumb (as in "thumbs up" or "thumbs down" in response to a poll)
pollicis	having to do with the thumb
profundus	deep (think of "profound"—something deeply meaningful)
radialis	having to do with the radius
superficialis	superficial (a muscle close to the surface)
tri-	meaning "three"; tri-headed muscle (e.g., triceps) is a muscle that has three distinct origins and one insertion
ulnaris	having to do with the ulna

You might be wondering, "What does this really have to do with my being a good massage therapist?"

Knowing the Latin meanings of a few basic anatomical terms and roots is a way to locate where a muscle is and what it does, just by knowing its name.

For example, your client points to the diagram of the *flexor digiti minimi brevis manus* muscle and asks you what it does. What's your best guess? Let's take it piece by piece:

flexor = bend, decrease angle of joint

digiti = finger

minimi = smaller or smallest

brevis = short

manus = hand

This muscle is the shorter hand muscle that flexes the little finger. How close were you?

Let's try one more: *extensor carpi radialis longus*.

extensor = extends

carpi = wrist

radialis = radius

longus = longer

Did you guess that this muscle has to do with wrist extension, that it's probably connected to the radius, and that it's a long muscle? If you did, you were right. Even if you were partly correct, that's great—the more you practice, the easier it gets! And you'll have more chances to practice as you work through this lesson.

Now let's get down to the bare-bones information about the forearm and hand.

🕮 Step 4 Bones of the Forearm and Hand

- ❑ Compared to the arm (humerus), the forearm and hand contain quite an interesting collection of bones—all sizes, shapes, and arrangements. As you become familiar with these bones (and later, the joints and muscles that connect to them), you'll come to appreciate, once again, the amazing way our bodies are put together—in this instance, so our forearms and hands can play, work, create, care for and express.

Start picturing people as a collection of bones. Visualize how those skeletons move as they work and play.

We could identify every bone of the forearm and hand by its name, location and function, and over time you might want to learn them all. But for now, you'll just need to know about some particular bones and some groups of bones.

As you go through this and future lessons, you might want to start really picturing the people around you as a collection of bones. For example, visualize their arms, forearms and hands as skeletons and notice how those skeletons move as the individuals work, play and relax. You'll begin to learn a lot about the muscles that are too tight, too loose, and those that are in good balance as you practice "seeing" the bones in action.

The Radius and Ulna

Let's review the bones of the forearm region, and add some detail. The radius and ulna articulate, or form joints with, the distal humerus, the wrist bones and each other.

The **radius** is on the thumb side of the forearm, and the thumb "radiates" out when it is in the anatomical position. The radius is the lateral bone of the forearm, with a narrow proximal end (the *head*) and a broader distal end.

The **ulna** is on the medial, or little finger, side of the forearm. Opposite to the radius, its proximal end is broad, and its distal end (its head) is narrow. The ulna includes the **elbow**, which has a "hook" on the end that locks on to the distal end of the humerus to form the elbow joint.

The Wrist and Hand Bones

The **carpals** are the short bones in the wrist (remember that *carpal* means *wrist*). Each hand has eight carpal bones—two rows of four bones. One row of carpals is at the crease in the wrist, and the other row is in the palm of the hand. The carpal bones form a joint directly with the radius: the wrist joint.

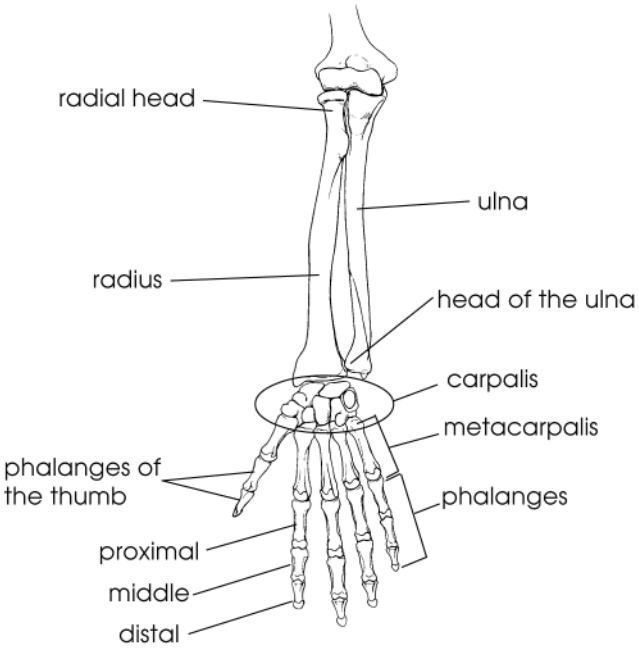


Figure 10-1: Bones of the forearm and hand, anterior view

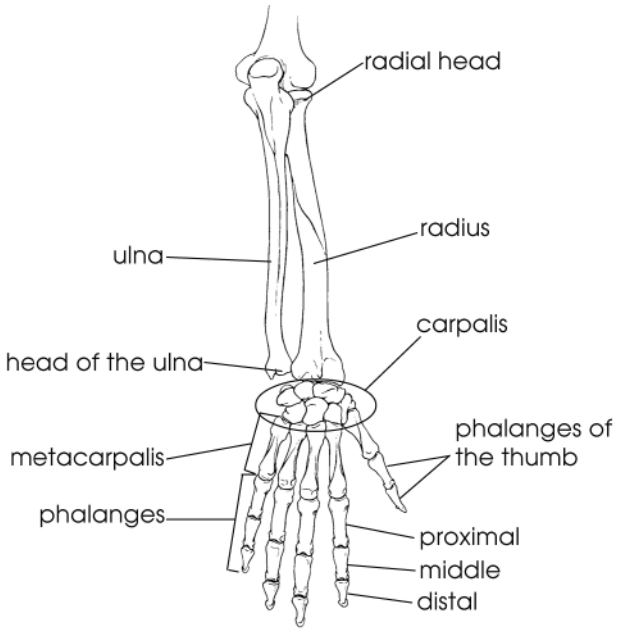


Figure 10-2: Bones of the forearm and hand, posterior view

The **metacarpals** (*meta* means *beyond*, so in this case, *beyond carpals*) are the hand bones, and each hand has five metacarpals.

The finger bones are called **phalanges**, and each hand has a total of fourteen phalanges, three on each of the four fingers and two on the thumb. The phalanges are further defined as **proximal phalanges** (the longest bones next to the palm of the hand), **middle phalanges** (the middle bones) and **distal phalanges** (the smaller, end bones).

You can see the bones of the forearm and hand in Figures 10-1 and 10-2.

🕮 Step 5 Joints of the Forearm and Hand

❑ You might have decided to become a massage therapist for a variety of reasons. But if you're like many massage therapists, one of those reasons might be that you express yourself through touch or that you like to work with your hands. And you will use your hands and upper limbs for much of your massage work. But have you ever considered how many bones, joints and muscles will be involved in the arm and hand movements you make while you're practicing massage therapy?

Take a minute and move your wrist, hand and fingers in all the possible combinations you can think of. Make a fist. Stretch and extend your fingers as wide and far apart as you can. Flex, extend and twist your wrist. Hold two fingers down with your thumb while extending the other two. Pretty amazing how quickly your body responds to your instant thoughts, isn't it? Let's take a closer look at the joints you use to make all the movements of your forearm and hand.

"The Arm Bone's Connected to the . . ."

In the lesson on the shoulder girdle (Lesson 7), you learned that the synovial joints of the shoulder girdle and arm included ball and socket, plane and saddle joints. The forearm and hand, including the elbow and wrist, include a variety of synovial joint types. Review these joints and their ideal ROM (range of motion):

- **Saddle**—As you learned in Lesson 7, saddle joints have bowl-shaped and rounded, rod-shaped surfaces that articulate with each other, with the bones fitting together like a rider in a saddle. The ROM of the saddle joint at the base of the thumb includes flexion, extension, abduction, adduction, circumduction and opposition. **Opposition** refers to the capability to move the muscles of the thumb and fingers against, or in opposition to, each other. Humans are one of the only species that can oppose the thumb and finger to do a particular task, such as thread a needle.

- **Hinge**—Just like a door hinge, a hinge joint supports the "open" and "close" movements of flexion and extension across the joint. The elbow joint and the middle and distal joints of the fingers are hinge joints.

- **Pivot**—As its name suggests, a pivot joint turns, or pivots, around a stationary base or bone. The proximal and distal radioulnar joints, which are the joints between the radius and the ulna at both ends of the bones, are pivot joints. The ROM across the radioulnar joints includes **supination** (turning the palm of the hand upward) and **pronation** (turning the palm of the hand downward).

- **Condyloid**—This kind of joint is also called an *ellipsoid* joint, because of the elliptical or oval shape of the "basin" in one bone that articulates with the oval shape of another bone in this kind of joint. Condyloid joints have a broad ROM, including flexion, extension, abduction and adduction, which can be combined to create circumduction. The word *condyle* means *knuckle* in Greek. Condyloid joints occur between the metacarpal bones of the hand and the proximal phalanges of the fingers, at the (first) knuckle. The wrist also is a condyloid joint.

- **Plane**—As you learned in the lesson on the shoulder girdle, a plane joint usually occurs between two flat surfaces and allows movement based on where the joint is and what it articulates with. The ROM of plane joints consists of shifting or gliding movements. The joints between the carpal bones and between the carpals and the metacarpals of the hand (except the thumb) are plane joints. When someone grabs your hand in a hearty handshake, and your palm conforms to his grip, your hand joints are shifting to adjust to the squeeze.

And the Name of This Joint Is . . .

Why is all this information about joints and movements so important to you as a massage therapist? If you've ever experienced pain from an injury somewhere on your body, let's say your arm, shoulder, neck or back, do you remember how you described that injury to someone else?

You might have talked about how the injury occurred, and you probably named what body part had been injured. But the other thing you probably did was to explain how something hurt when you moved a certain way, or that you couldn't move in your usual way because of the injury. In other words, we usually describe our pain in terms of some movement—either a movement that is now painful or that is limited or impossible because of the pain.

Clients usually describe their pain in terms of a movement. So if you know the movement, you can help them define what's causing the pain.

Think about what this information can tell you as a massage therapist. Massage helps to balance the tension across a joint, and movement occurs at joints. If you know what movements are affected by a client's pain—and you know the joints and muscles that are involved in those movements—you can begin to assess where you need to focus your attention for treatment.

Now let's move ahead (get those joints in gear!) and talk about the names and ideal ROMs of the joints in the forearm and hand regions.

- **Elbow joint**—the *hinge joint* between the distal humerus and the proximal radius and ulna. The anatomical names for the elbow joint are the **humeroulnar joint** and **humeroradial joint**, because the joint is actually formed by the articulations of the three bones and these two closely connected joints. However, you can pretty well bet you'll only hear this joint referred to as the elbow joint. The elbow joint also comes together with the proximal radioulnar joint in a common joint capsule. As you know, a hinge joint's ROM is flexion and extension. Visualize bending your elbow (flexion) to put food in your mouth, and straightening your elbow (extension) to hand some of that food to someone else.

- **Proximal and distal radioulnar joints**—the *pivot* joints between the head of the radius and proximal ulna and between the distal radius and the head of the ulna.

- The proximal and distal radioulnar joints always work together (similar to the way the AC/SC joints do in the shoulder/clavicle region) in the movements of supination and pronation of the forearm. The pivoting action of these two joints at the same time lets you twist your forearmetween the two positions. Look at Figure 10-3, which demonstrates the actions of elbow flexion with forearm supination.

Figure 10-3: Elbow flexion with forearm supination

Figure 10-4 shows supination and pronation.

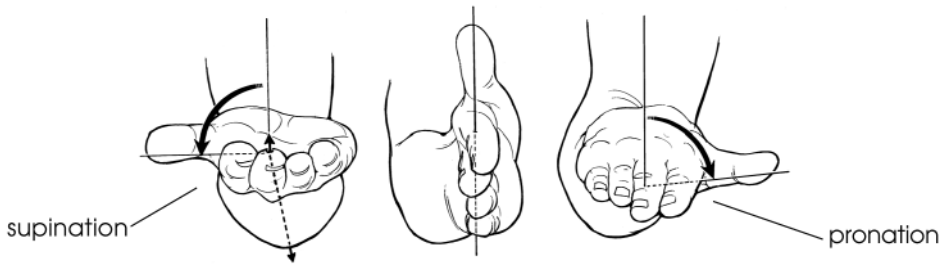


Figure 10-4: Forearm supination and pronation

Figure 10-5 demonstrates elbow extension with forearm pronation.

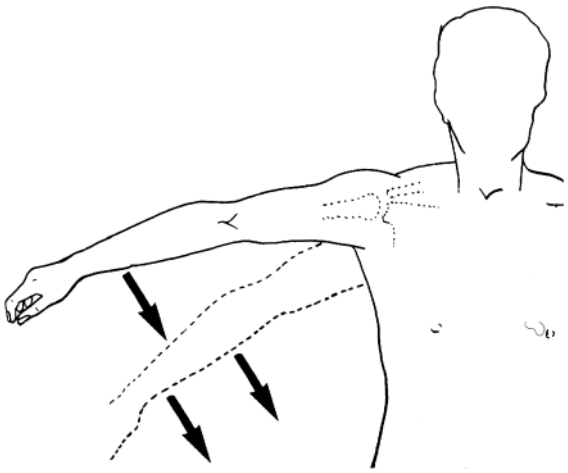


Figure 10-5: Elbow extension and forearm pronation

- **Wrist (radiocarpal) joint**—the joint between the forearm and the hand. Although you don't need to memorize *radiocarpal* for this course, if you use the information you already know, you'll be able to remember this term easily if you ever need it. You know that the names of most joints come from the bones that articulate at the joint. So all you need to remember is that the radius and proximal carpal bones meet at the wrist, and you should be able to come up with radiocarpal as the joint name. The wrist joint is a *condyloid* (ellipsoid) joint whose ideal ROM is flexion, extension, abduction, adduction and circumduction.

Can you think of specific actions that would involve wrist abduction and adduction? If you're unsure, try this: Place your forearm and hand in the anatomical position (palm forward). Remember that abduction is movement away from the midline of the body, so abduction of the wrist would be moving your thumb outward. Adduction would be moving the wrist in the opposite direction, toward the middle of your body (the ends of your fingers would be aiming toward your body).

Now flex your elbow joint and begin to pronate your forearm so that your thumb is uppermost. Pretend to shake someone's hand. Wrist adduction and abduction would be the movements you make if you're shaking hands and bending your wrist up and down as you do so. Or if you're going to do a karate-chop motion, the action you make in moving your wrist to pull your hand back or up before the chop is wrist abduction, and the chop itself is wrist adduction.

If you do a karate-chop motion, the movement before the chop is wrist abduction, and the chop itself is wrist adduction.

Important: Although we are introducing you to the anatomical terms for bones, bony landmarks, joints and muscles throughout this lesson, you should know that you don't have to memorize every single anatomical name. Generally speaking, the anatomical terms for major bones, bony landmarks and muscles are important to know. The common names of well-known joints in the body, however, are okay to use (elbow, wrist, knuckles and so on). For information only, we will continue to include such anatomical names in parentheses, but you don't need to memorize them if their common names are typically used.

- **Intercarpal joints**—joints between carpal bones and other carpal bones. These joints are plane joints and allow a small amount of shifting within the hand.

- **Carpometacarpal joint of the fingers**—joint between the distal bones of the wrist (carpal) and the proximal ends of the hand (metacarpal) bones. Together with the intercarpal joints, these joints are usually called *hand* joints. These joints are plane joints, with a shifting or gliding ROM, with one exception: the joint at the base of the thumb. The thumb joint is a saddle joint, with a ROM of flexion, extension, abduction, adduction, circumduction and opposition.

- **Metacarpophalangeal joints**—the anatomical term for the largest *knuckle* joints, between the distal end of the hand bones and the base of the first finger bones (phalanges). The joints at these first knuckles are *condyloid* (ellipsoid), which means they allow movement on two planes: flexion/extension (raising and lowering the fingers at their base) and abduction/adduction (moving the fingers side to side at their base in relation to the midline of the hand). And as you can see by moving your own fingers, you can combine these movements in a cone or circular action (circumduction).

- **Interphalangeal joints**—the middle and distal knuckle joints of the fingers (phalanges). These *finger* joints are hinge joints with a ROM of flexion and extension.

Review the locations of the joints of the forearm and hand in Figures 10-6 and 10-7.

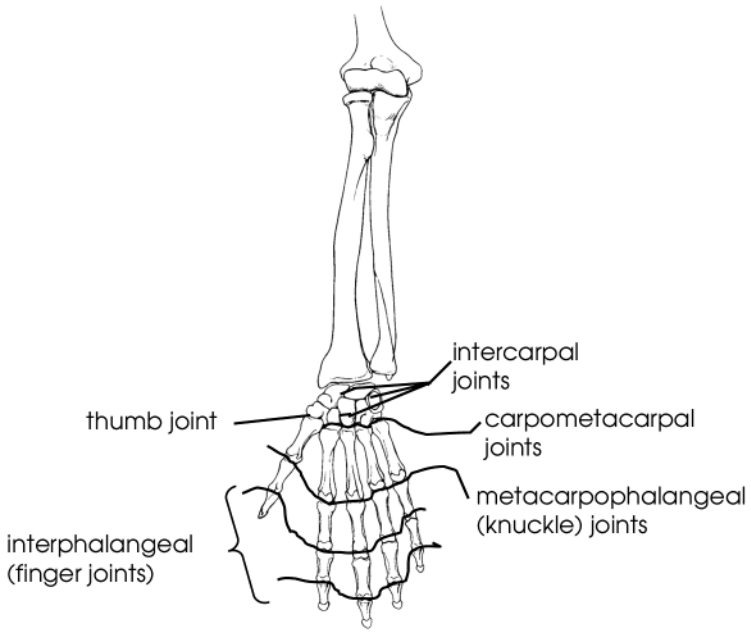


Figure 10-6: Joints of the hand, anterior view

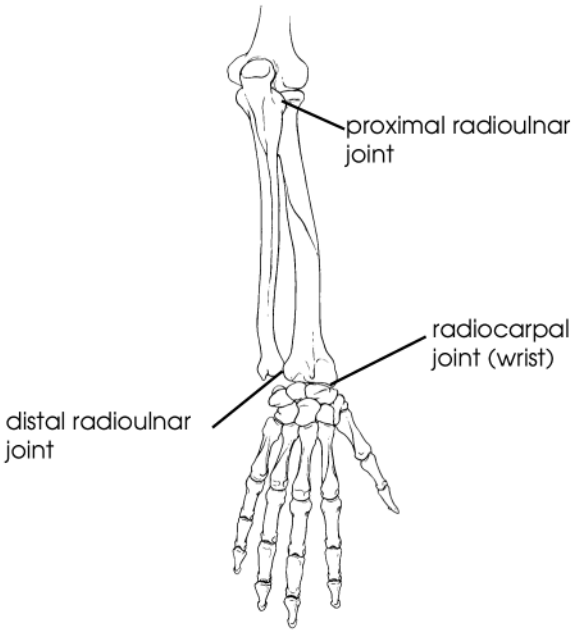


Figure 10-7: Joints of the forearm and wrist, posterior view

🕮 Step 6 Bony Landmarks of the Forearm and Hand

❑ Now that you're seeing the skeleton within all your friends and relatives, maybe you're ready to start visualizing some "meat on those bones" again. As you'll remember from the lesson on the shoulder girdle and arm (Lesson 7), one of the best ways to know where to find a muscle is to have some points of reference, or landmarks, to go by. Just as the shoulder girdle and arm have various bony landmarks, so do the forearm and hand.

In this step, you'll become familiar with some of the important landmarks you can use to help you locate muscles, move from one area to another and communicate information to your clients in your work as a massage therapist.

To Get from the Arm to the Forearm, Take the First Bony Landmark . . .

You're already familiar with several bony landmarks that are important in your study of the forearm and hand from your study of the humerus. Let's quickly review those landmarks, which you can identify in Figures 10-8 and 10-9:

- **Lateral epicondyle**—the flared-out, lateral (outside) portion of the distal humerus.
- **Medial epicondyle**—the flared-out, medial portion of the distal humerus.
- **Supracondylar ridge**—the ridge above the medial and lateral epicondyles.

You should also be familiar with the following bony landmarks of the forearm and hand. As relatively long bones, the radius and ulna have a couple of bony landmarks with the same names as similar locations on the humerus. Specifically, both the radius and the ulna have a *head*, and both bones have a *shaft*.

- **Head of the radius**—the circular, bell-shaped portion of bone that forms the proximal end of the radius.
- **Head of the ulna**—the distal, knobby end of the ulna on the little-finger (medial) side of your wrist.
- **Shaft of the radius**—the long, midsection of the radius. Most of the shaft of the radius is deep in muscle tissue and might not be palpable except on very slim forearms. The distal portion closer to the wrist is usually more superficial and palpable.
- **Shaft of the ulna**—the long, midsection of the ulna. You can feel the shaft of the ulna from the little-finger side of the forearm all the way up to the point of the elbow.

- **Olecranon process**—the anatomical term for the elbow (*olecranon* is Greek for *elbow*), which is often referred to as the *funny bone*. The olecranon process is located on the proximal end of the ulna and forms a joint with the distal humerus. This landmark is the point of the elbow, which you can easily locate and palpate.

- **Olecranon fossa**—the indentation in the distal end of the humerus into which the olecranon process fits.

- **Radial notch**—a specialized fossa on the proximal ulna that fits the head of the radius to form the proximal radioulnar joint.

- **Styloid processes**—both the radius and the ulna have a styloid process at their distal ends. The radius' styloid process is larger and extends further toward the hand than the ulna's styloid process. Both processes are very easy to palpate on the medial and lateral sides of the forearm, just above the wrist joint. (You might find it helpful to remember that *stylus* means *pen*, and when you use a pen, your wrist moves.)

- **Radial tuberosity**—a roughened area below (distal to) the head of the radius, on the anterior, medial portion of the bone.

Interosseous Membrane

You should also know one other term at this point, which isn't really a bony landmark, but it's closely associated with the bones of the forearm:

- **Interosseous membrane**—a layer of fibrous tissue, classified as a fibrous joint, that separates the space between the radius and ulnar bones (remember that *inter* means *between*, and *osseous* refers to *bone*). The interosseous membrane holds the radius and ulna in proper relationship with one another. It is classified as a fibrous joint.

Now look at Figures 10-8 and 10-9 to make sure you have a good understanding of where these bony landmarks are located.

To review what you've learned so far in this lesson, study Table 10-2, which lists the bones of the forearm and hand, their common names, their essential bony landmarks, and key relationships. (We've also included the humerus and its bony landmarks that are relevant to the forearm and hand.)

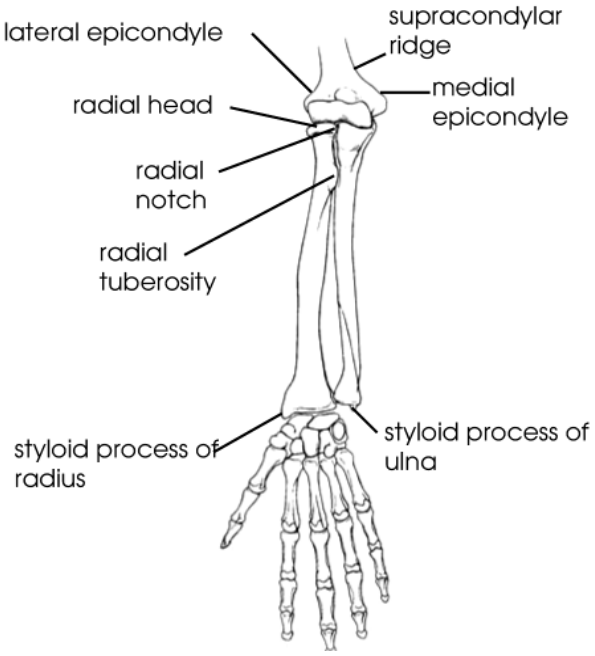


Figure 10-8: Bony landmarks of the forearm and hand, anterior view

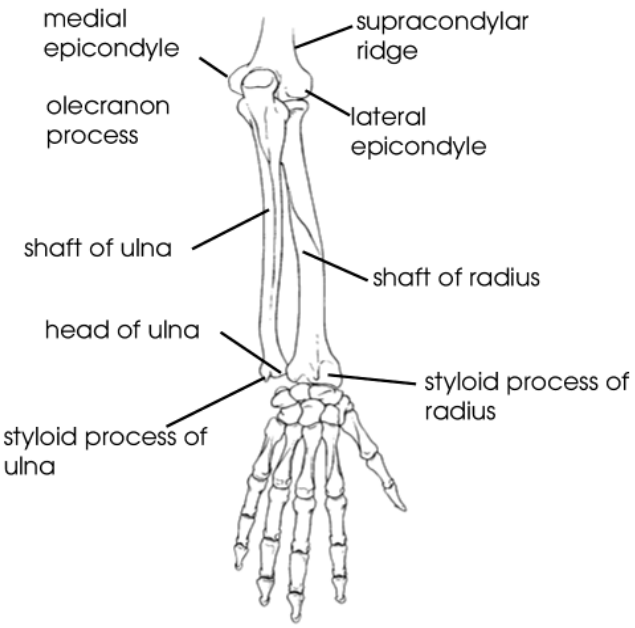


Figure 10-9: Bony landmarks of the forearm and hand, posterior view

Table 10-2: Bones and Bony Landmarks of the Forearm and Hand

Bone	Common Name	Essential Bony Landmarks	Key Relationships
Humerus	armbone	▸ lateral epicondyle ▸ medial epicondyle ▸ supracondylar ridges ▸ olecranon fossa	The distal end of the humerus adjoins the head of the radius, and the olecranon fossa of the humerus articulates with the olecranon process of the ulna to form the elbow (humeroulnar) joint.
Radius		▸ head ▸ shaft ▸ radial tuberosity ▸ styloid process ▸ interosseous membrane	▸ The head of the radius articulates with the radial notch of the ulna to form the proximal radioulnar joint. ▸ The head of the radius articulates with the distal humerus at the elbow joint. ▸ The radial tuberosity and styloid process are insertion points for various muscles of the forearm and hand. ▸ The interosseous membrane forms a connection between the radius and the ulna.
Ulna		▸ head ▸ shaft ▸ olecranon process ▸ (“funny bone”) ▸ styloid process	▸ The head of the ulna and the distal radius articulate to form the distal radioulnar joint. ▸ The olecranon process articulates with the olecranon fossa of the distal humerus to form the hinge joint of the elbow.
Carpals	wrist bones		The two rows of four bones each that: ▸ articulate with the radius to form the wrist (radiocarpal) joint, ▸ articulate with each other to form hand joints, and ▸ articulate with the proximal metacarpals to form the joints (carpometacarpal) between the wrist and the hand.

Table 10-2: Bones and Bony Landmarks of the Forearm and Hand (continued)			
Bone	**Common Name**	**Essential Bony Landmarks**	**Key Relationships**
Carpometacarpal #1	first wrist bone and first hand bone, at the thumb		The articulation between a carpal bone and the first metacarpal bone form the thumb joint.
Metacarpals	hand bones		The five hand bones that: ▸ articulate with the carpals to form the joints (carpometacarpal) between the wrist and the hand, and ▸ articulate with the phalanges to form the joints (metacarpophalangeal) between the hands and proximal phalanges.
Phalanges	finger bones		The fourteen finger bones, of which ▸ the base of the proximal phalanges articulate with the distal metacarpals to form the knuckles (metacarpophalangeal joints), and ▸ the phalanges articulate with each other to form the finger (interphalangeal) joints

✍ Step 7 Practice Exercise 10-1

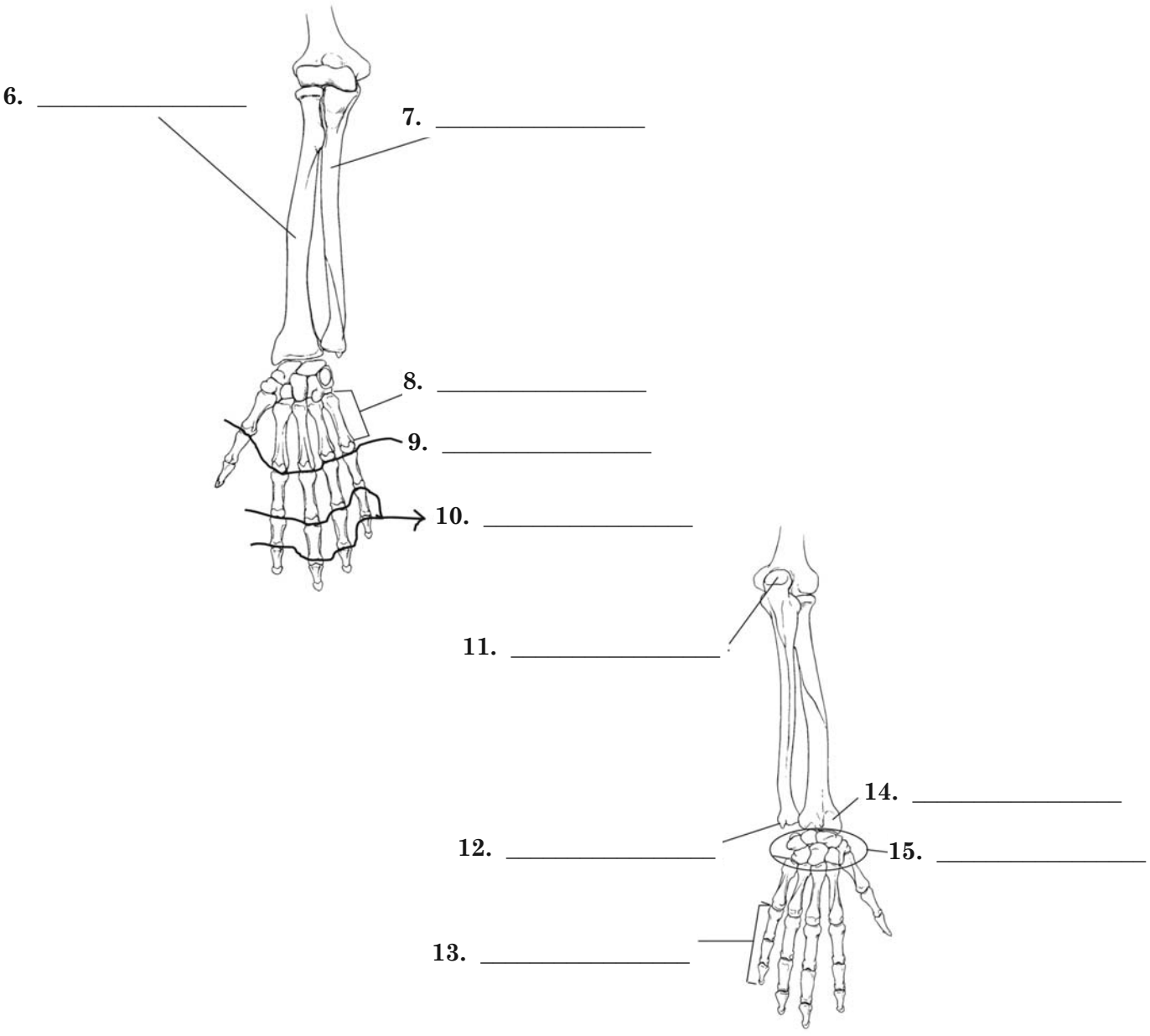
❑ For items 1 through 5, match each Latin term or root with the correct word or phrase.

1. _____ **profundus**
2. _____ **manus**
3. _____ **minimi**
4. _____ **carpi**
5. _____ **pollicis**

a. having to do with the thumb
b. deep
c. hand
d. smaller
e. pertaining to the wrist

For items 6 through 15, select the correct term from the list to label each of the bones, bony landmarks and joints in the following diagrams.

styloid process of the ulna	carpals
styloid process of the radius	radius
olecranon process	ulna
knuckle joints	metacarpals
finger joints	phalanges



Step 8 Review Practice Exercise 10-1

- ❑ Compare your answers to Practice Exercise 10-1 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 9 Muscles of the Forearm and Hand

- ❑ You already learned about 10 different arm muscles, and you know that those 10 muscles help us move our arms in many different directions. For the most part, however, the movements of the arm are relatively large movements that involve bigger bones and muscles. Such movements are referred to as **gross motor movements**.

Delicate actions such as painting are called fine motor movements.

Now think about the kinds of movements that are possible with our forearms, wrists, hands and fingers. Although we can move these body parts in large actions (for example, throwing a ball or waving to someone across the street), we can also control our hands and fingers to make small and refined movements, such as creating exquisitely detailed sculptures and paintings, or surgically repairing the tiniest nerve fibers of the human body. We call such delicate actions **fine motor movements**.

If you're a parent, or have ever studied child development, you probably know that young children develop gross motor skills, such as the ability to crawl and walk, before they develop fine motor skills, such as how to color within the lines. This progression partly depends on the development of the central nervous system. But fine motor skills also require more individual muscles at a time to respond to the brain's instructions.

For example, the forearm and hand include more than 30 separate muscles (plus the biceps brachii and triceps brachii, which are two muscles of the arm that we haven't discussed yet). These muscles must work with each other and with the bones, joints, tendons, ligaments and nerves of the region to accomplish the most refined and precise movements.

Now for the good news: You won't need to learn all these muscles for this course! Because many of the muscles in the forearm and hand work closely together in the same types of movements, we are going to talk about muscles in groups, based on the actions they do. Specifically, you'll learn about the flexors, the extensors, the supinators and the pronators. As a massage therapist, however, you'll also want to be familiar with some of the important individual muscles within each group, so we'll introduce you to those as well.

Flexor Muscle Group

As you know by now, *flexion* refers to decreasing the angle of a joint. A number of muscles function as flexors of the elbow, wrist, hand and finger joints. Some of these flexors also support one or more other movements, depending on their location and their relationship with other muscles. So don't be surprised if you see a muscle included in more than one group.

Elbow Flexors

The muscles that flex the elbow joint are the biceps brachii, the brachialis, the brachioradialis, and the pronator teres. Of these muscles, the primary elbow flexors are the biceps brachii and the brachialis.

Are you ready for a little silliness to help you remember the elbow flexor muscles? Think of this group as "three Bs and a P," and notice that all four letters are "flexed"—that is, the loops of the Bs and P are flexed, or bent, just as the elbow is when these muscles are contracting. (Don't groan—we said silly, didn't we?)

Biceps Brachii

The **biceps brachii** muscle, usually just referred to as the **biceps**, is a superficial muscle located on the anterior arm. You're familiar with this muscle as the one most people think they are flexing when they want to show off their arm muscles! (Little do they know, right? Remember that it is the joint that does the flexing.) As we mentioned earlier, the biceps muscle gets its name from the fact that it has two heads (*bi-* means *two*, *-ceps* means *head*), and that each head of the muscle originates in a different place. The muscle fibers converge and have one point of insertion.

Figure 10-10: Biceps brachii

The short head of the biceps originates in the coracoid process of the scapula, and the long head originates at the supraglenoid tubercle of the scapula, then travels down the bicipital groove of the humerus. Both portions of the biceps insert in the radial tuberosity of the radius. An important distinction of the biceps is that, although it is the biggest muscle of the anterior arm, the biceps doesn't attach anywhere on the arm! You can see the shape and location of the biceps in Figure 10-10.

In addition to its role as an elbow flexor, the biceps also is a player in flexion of the shoulder joint, together with the anterior deltoid, pectoralis major and the coracobrachialis ("coco-brake"), which you learned about previously. The biceps works as an antagonist to the triceps brachii muscle group at both the shoulder and elbow joints. You'll learn about the triceps in the extensor group of muscles.

The **brachialis** is a strong elbow flexor that lies on the anterior arm, deep to the biceps. The brachialis is often called the "biceps' best friend," because its thick belly lying underneath the biceps often makes the biceps appear to have more bulk than it really does. (So next time someone tries to impress you with his big biceps, you might go to the defense of the brachialis!) The brachialis originates on the lower half of the front of the humerus and inserts in the proximal end of the front of the ulna. You can see the brachialis in Figure 10-11. (In this figure, the biceps muscle has been removed for a better view of the brachialis.)

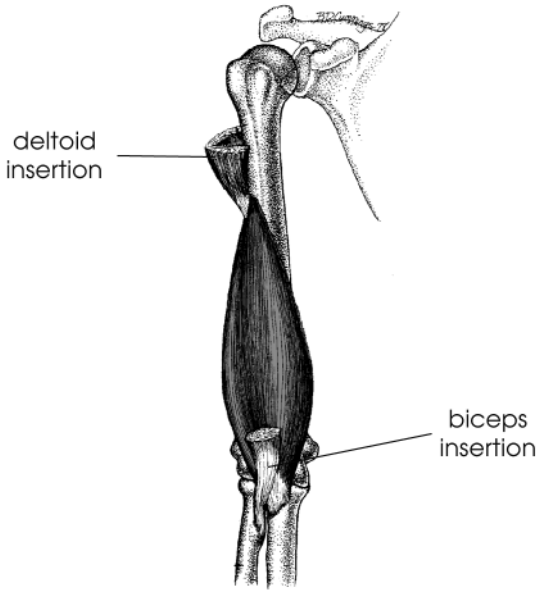


Figure 10-11: Anterior view of brachialis, right arm

Brachioradialis

The **brachioradialis** muscle is a superficial muscle that is the only muscle to span the length of the forearm without crossing the wrist joint. The brachioradialis originates on the lateral supercondylar ridge of the humerus and inserts in the styloid process of the radius. If you flex your elbow and resist that flexion with your other hand pressing downward, the contracted brachioradialis will be visible on your forearm. And if you turn your forearm on edge (laterally) so the side of your thumb is on top, and again flex your elbow against the resistance of your other hand, the brachioradialis should bulge noticeably on the top (lateral edge) of your forearm. Notice the location, size and shape of this muscle in Figure 10-12.

Figure 10-12: Brachioradialis, right arm

Pronator Teres

You might guess from its name that the **pronator teres** is a muscle involved in pronation. (You know that *prone* means *face down*.) In fact, this muscle is very important in forearm pronation, and you'll learn the details about it shortly when we discuss the pronator group. For now, just remember that the pronator teres also assists with elbow flexion.

Carpal Tunnel

As part of your study of the forearm and hand, we want to introduce you now to another region that you'll learn more about later in the course and that as a massage therapist you'll probably have an opportunity to explore with at least some clients. This region is the **carpal tunnel** of the wrist. As its name suggests, the carpal tunnel is a canal formed between the carpal bones and a thin band of fibrous tissue that wraps across the palmar region of the wrist. A network of flexor tendons and the median nerve pass through this tunnel. (In case you love Latin, the fibrous band of the wrist is called the *flexor retinaculum*.)

You might know that **carpal tunnel syndrome** is a chronic condition that people who do repetitive movements with their upper limbs sometimes develop. You'll learn more about this syndrome later in the course. For now, the two important things to remember are that the carpal tunnel exists, and that the median nerve, which originates in the upper spinal column, runs across the shoulder region, down the length of the arm and forearm, and through the carpal tunnel. This is the nerve that is affected in carpal tunnel syndrome and is the source of the numbing, pain, and other discomforts associated with the condition. You can see the carpal tunnel region of the wrist in Figure 10-13.

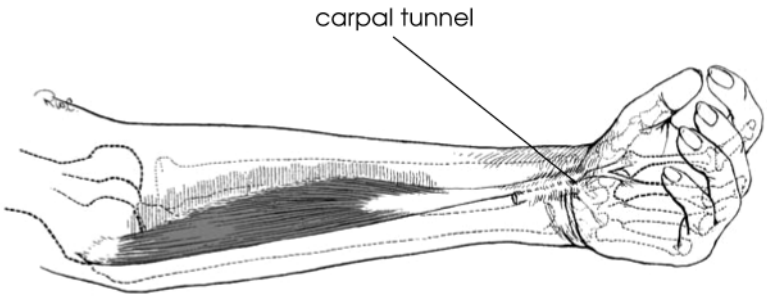


Figure 10-13: Cross-section of the wrist showing carpal tunnel

Wrist and Hand Flexors

With the wrist and hand flexors, we've come to the first grouping of several muscles that you can remember just by their general location and action. At the same time, you should know that these muscles do have Latin or Greek anatomical names, and you can make quite intelligent guesses about their locations and functions by studying their names. You don't have to learn the names of these five flexors, but see how many you can guess something about, based on the terminology you already know from earlier in this lesson and in the course:

flexor carpi radialis _____

_____

palmaris longus _____

_____

flexor carpi ulnaris _____

_____

flexor digitorum superficialis _____

_____

flexor digitorum profundus _____

_____

flexor pollicis longus _____

_____

Okay, let's see how you did. Here's some information about each muscle, with clues from their names in italics for you:

- **Flexor carpi radialis**—*flexes* and abducts the wrist (*carpus*) and crosses over the *radius* from the medial epicondyle of the humerus down to the hand. The tendon of this muscle passes through the carpal tunnel.
- **Palmaris longus**—flexes wrist; has a *long* tendon that inserts into the fascia of the *palm* of the hand.
- **Flexor carpi ulnaris**—*flexes* and adducts the wrist (*carpus*); runs from the olecranon process of the *ulna* to the hand.

- **Flexor digitorum superficialis**—*flexes* up to the proximal interphalangeal finger (*digits*) joints, and it's a *superficial* muscle. The tendon of this muscle passes through the carpal tunnel.

- **Flexor digitorum profundus**—*flexes* all finger (*digits*) joints, and it's a deep (*profound*) muscle. The tendon of this muscle passes through the carpal tunnel.

- **Flexor pollicis longus**—*flexes* thumb (*pollicis*) and wrist. This muscle's tendon also passes through the carpal tunnel.

How many pieces did you guess correctly?

Take just a few minutes now and palpate your anterior forearm as you move your wrist and fingers around. Notice how alive your forearm is with movements from all these various muscles (and their resulting tendons). As a group, these muscles are known as the *wrist and hand flexors*.

Here's what you should know and remember about the wrist and hand flexors in general: They originate as a group at the medial (inner) epicondyle of the humerus as a common flexor tendon, and they insert in the hand, again generally as tendinous tissue. The forearm and hand flexors are in three layers, with some muscles on the surface, some in the middle layer, and some in a deeper layer. As a group, the flexors are thicker and more flexible than the extensors, which we will talk about shortly. When the forearm and hand flexors contract, the result is flexion of the wrist or finger joints.

Look closely at Figure 10-14 to get a sense of these muscles and how they work together in wrist and hand flexion. The medial epicondyle of the humerus, and the tendinous, fascial tissue of the wrist are included in the figure for reference. (The flexor digitorum profundus muscle is not shown, because it lies deep to the other flexor muscles.)

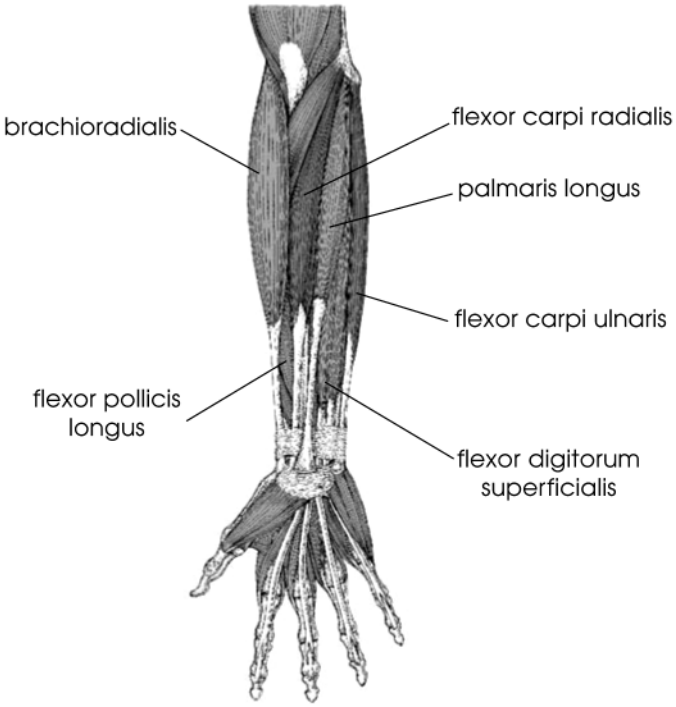


Figure 10-14: Forearm, wrist, and hand flexors, anterior view

Extensor Muscle Group

As antagonists to the flexor muscle group, extensor muscles work to increase the angle of joints. Again, a number of muscles function to extend the elbow, wrist, hand, and fingers. You can easily remember the name and function of extensors if you think of extending your hand to someone. The extensor muscles are doing their job as you extend your hand.

Elbow Extensors

The two muscles that extend the elbow joint are the triceps brachii and the anconeus. Let's look more closely at each of these muscles.

Triceps Brachii

The **triceps brachii** muscle, usually just referred to as the **triceps**, is the three-headed (*tri-* means *three* and *-ceps* means *head*) muscle on the backside (posterior) of the humerus. In fact, the triceps is the only muscle located on the back of the arm. Based on what we've already said, remember that the three heads of the triceps muscle group originate at different places, and then the muscle fibers come together and insert in one place.

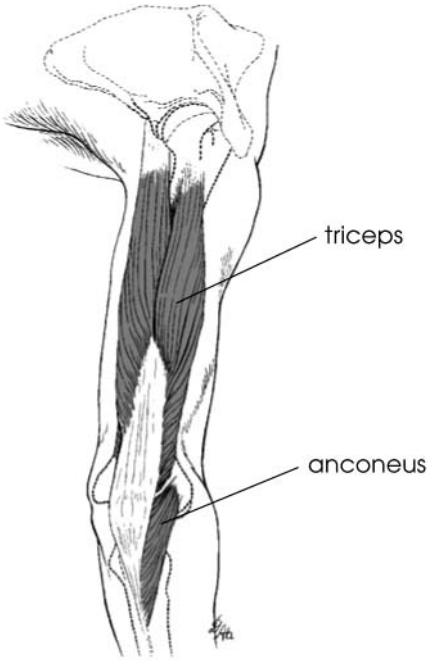


Figure 10-15: Triceps and anconeus

The long head of the triceps originates at the back of the armpit, on the infraglenoid tubercle of the scapula. The lateral head originates on the posterior surface of the upper half of the humerus, and the medial head originates on the posterior surface of the lower half of the humerus. The upper (proximal) portions of the triceps are deep to the deltoid muscle that caps the shoulder, but the rest of the triceps is easily palpated.

All three heads of the triceps come together into a very thick tendon that inserts into the olecranon process of the ulna, at the elbow joint. You can see the location and arrangement of the triceps in Figure 10-15.

The triceps is the prime mover for extension of the elbow (that is, straightening the hinge joint of the elbow).

Once you know where the biceps and triceps are located, remembering the movements they make should be fairly easy. Remember that the triceps and biceps work as antagonists to each other. When the biceps contracts, the triceps lengthens, and vice versa.

Anconeus

The **anconeus** is just a neat little muscle to remember (even if it's just so you can tell people you know where it is). The anconeus is superficial and triangular-shaped. It assists in elbow extension. The anconeus originates at the lateral (outside) epicondyle of the humerus and spreads out to attach on the lateral olecranon process. You can see its relative size and location in Figure 10-15.

This little muscle is important in the condition known as "tennis elbow." When people perform lots of backhand motions such as tennis often requires, the anconeus can become inflamed.

Wrist and Hand Extensors

The forearm and hand extensors are a group of six muscles whose function is to extend the wrist and forearm. Again, you can play around with their names, but you don't need to remember them for this course. Here they are, for your information (and increasing expertise in Latin and Greek, of course):

- Extensor carpi radialis longus
- Extensor carpi radialis
- Extensor digitorum
- Extensor carpi ulnaris
- Extensor pollicis longus
- Extensor pollicis brevis

The wrist and hand extensors originate either on the lateral epicondyle of the humerus or on its supracondylar ridge. They all insert in the posterior hand. Figure 10-16 shows these muscles and their locations on the forearm and hand.

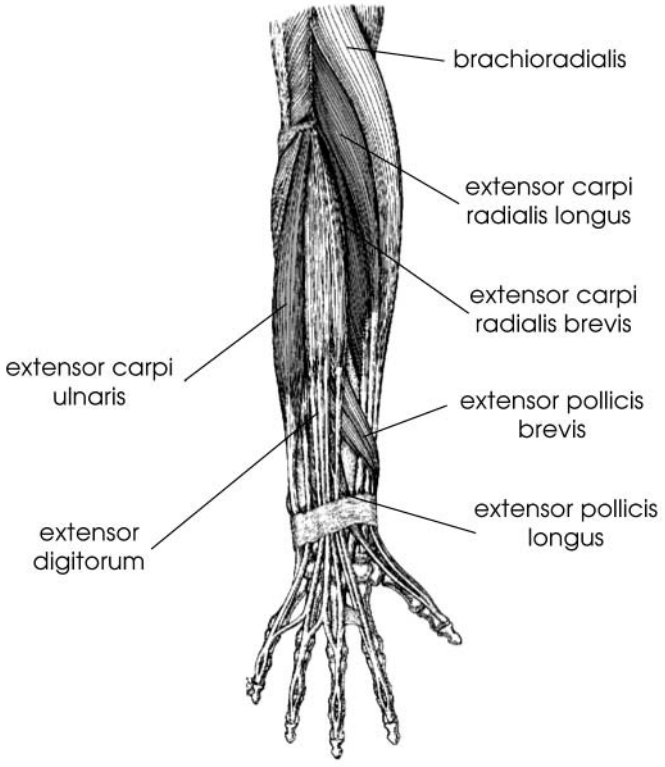


Figure 10-16: Wrist and hand extensors, posterior view of right forearm

To reinforce your understanding of the relationship between the flexors and extensors, just remember that they are antagonists to each other: The flexors are on the anterior (palm) side of the forearm and hand; the extensors are on the posterior (back) side of the forearm and hand.

Supinator Muscle Group

You'll recognize one of the two muscles in the supinator muscle group—the biceps brachii. The other one will be easy to remember because it's just called the *supinator*. (Isn't it good to know that learning the anatomical names of body parts is a little like everyday life? About the time you think you really need a break, you might get one.)

Biceps Brachii

In addition to its role as a major muscle in shoulder and elbow flexion, the biceps is the primary muscle involved in supination of the forearm. Contracting the biceps, with its insertion into the radius at the inner elbow, causes both the elbow to flex and the forearm region to supinate, or turn palm-up.

Supinator

As the name of this muscle suggests, the **supinator** does just that—it supinates the forearm. The supinator originates on the lateral epicondyle of the humerus and the posterior of the proximal ulna, and wraps around to insert on the anterior of the proximal radius, as you can see in Figure 10-17. The supinator is a deep muscle under all the long muscles of the forearm, between the radius and the ulna, so it's often difficult to isolate and palpate.

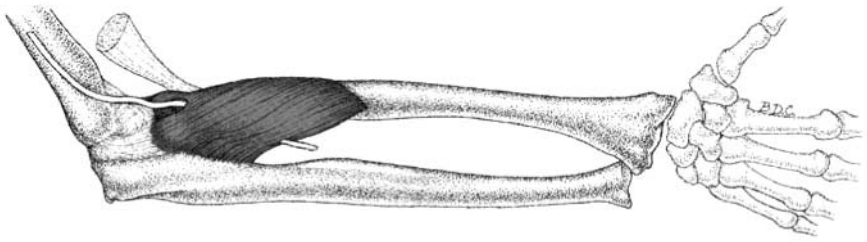


Figure 10-17: Supinator, posterior view of right forearm

Pronator Muscle Group

Famous physicist Isaac Newton's Third Law of Motion says that for every action, there must be an equal and opposite reaction. For example, a bird uses its wings to fly. The bird's wings push air down, and the reaction is that the bird then rises (or is pushed up). We've really been talking about this "law" in the human body when we've described muscles that are antagonists to each other.

So if some muscles are supinators, others must be pronators. In fact, the pronator muscle group for the forearm and hand consists of only two muscles, and again you should find their names fairly easy to remember: Both names include *pronator*. The two pronator muscles of the forearm and hand are the pronator teres and the pronator quadratus. What other clues do we get from "teres"?

Pronator Teres

We've already introduced the **pronator teres** as a muscle that assists with elbow flexion, and we mentioned that it is a primary muscle in forearm pronation, or in turning the forearm facedown. Look at Figure 10-18 to see where the pronator teres originates (on both the medial epicondyle of the humerus and the proximal ulna) and inserts (on the mid-lateral shaft of the radius).

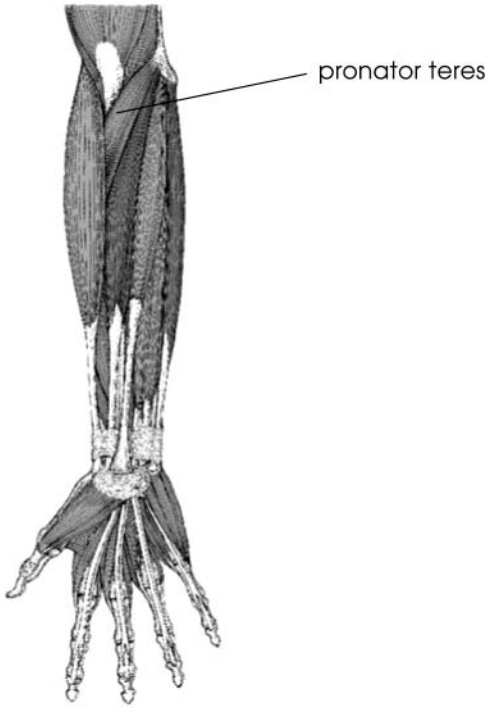


Figure 10-18: Pronator teres, anterior view of right forearm

You should be aware of two other significant facts about the pronator teres:

- The pronator teres is the only muscle whose fibers run at an angle in relationship to other muscles in its region. This information can be helpful in terms of the massage strokes you use in this area.

- The median nerve runs between parts of this muscle. This is important to know in terms of massage, because the median nerve is the nerve affected in carpal tunnel syndrome.

Pronator Quadratus

The **pronator quadratus** is a rather out-of-the-way muscle, but it's important for its role as pronator (i.e., turning palm down) of the forearm. The pronator quadratus (*quadratus* means *squared* in Latin) is the deepest muscle of the anterior forearm. It is a square-shaped band of muscle that wraps across the underside of the wrist, like a watchband. The pronator quadratus runs between the distal anterior surfaces of the ulna and the radius.

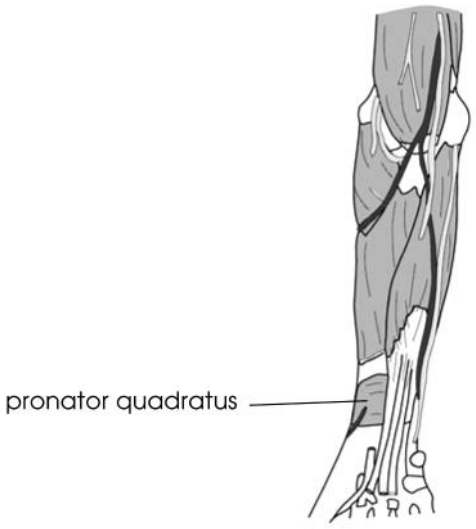


Figure 10-19: Pronator quadratus, anterior view of forearm

Finger Muscles

If we included all the muscles in the fingers here, this section could become quite long. Instead, because there are so many small muscles in the fingers, you can just think of them for now as finger muscles.

In terms of movement, you know from studying the joints of the hand and fingers that the associated movements for the fingers include flexion, extension, adduction and abduction (which allows for some circumduction) at the base of the fingers, and flexion and extension at the middle and end finger joints. The thumb, with its saddle joint at the base, can also move in flexion, extension, abduction, adduction, circumduction and opposition.

In Figures 10-20, and 10-21, you can see some of the complex network of muscles in the back and palm of the hands. As you look at these figures, you can probably appreciate why a sensitive and thorough hand massage is such a treat for your clients—especially if they work a lot with their hands!

Figure 10-20: Muscles of the hand, anterior view

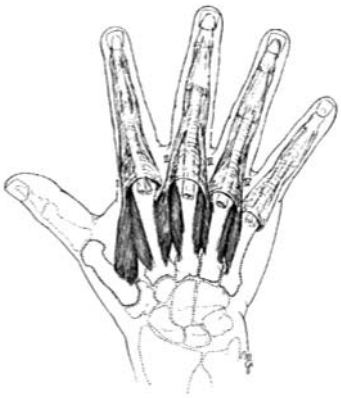


Figure 10-20: Muscles of the hand, posterior view

✍ Step 10 Practice Exercise 10-2

❑ Take a few minutes to check your progress. Match each of the following words with the definition that best describes it.

1. _____ **gross motor movements**
2. _____ **fine motor movements**
3. _____ **biceps**
4. _____ **brachialis**
5. _____ **wrist and hand flexors**
6. _____ **triceps**
7. _____ **supinator**
8. _____ **pronator teres**
9. _____ **Anconeus**
10. _____ **brachioradialis**

a. a deep muscle under all the long muscles of the forearm, between the radius and the ulna
b. the "biceps' best friend"
c. three-headed muscle on the backside of the humerus
d. refined movements made with forearms, wrists, hands and fingers
e. works as an antagonist to the triceps brachii muscle group
f. superficial, triangular-shaped muscle that assists in elbow extension
g. movements that involve bigger bones and muscles
h. originate at the medial epicondyle of the humerus and insert in the hand
i. assists with elbow flexion; the only muscle whose fibers run at angle in relationship to other muscles in its region
j. the only muscle to span the length of the forearm without crossing the wrist joint

🗝 Step 11 Review Practice Exercise 10-2

❑ Compare your answers to Practice Exercise 10-2 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 12 Anatomy Flashcards

- ❑ Go ahead and take out your Forearm and Hand Flashcards. You'll notice that they show the muscles, joints, and bony landmarks of the forearm and hand. On the back of the muscle cards, you'll see the origins, insertions, and actions listed for each.

  Make it a goal to learn two of the flashcards each day. Don't get bogged down in memorizing the origins and insertions—that knowledge will come with experience. While it's a good idea to become familiar with the names and origins and insertions, make it a goal to really learn the actions of each muscle, along with the bony landmarks and joints of the region.

  Knowing the bones, joints, muscles and their actions is the foundation of your massage therapy hands-on skills. Just take it one step at a time—your anatomy flashcards make it easy!

Step 13 Pronouncing Terms

- ❑ Follow these steps:

  1. Take your Quick-Learn Tutor and Set 6 terminology cards out of your Quick-Learn Tutor Kit. Insert the first flashcard for Set 6 into Side A of the Tutor.
  2. Put your pronunciation CD in your CD player.
  3. Listen to each term as it is pronounced on the CD. After you hear the term, put the CD player on pause.
  4. Look at the term in the left window of your Quick-Learn Tutor and practice pronouncing the term aloud several times until you can pronounce it correctly and easily. Push the terminology card up and read the meaning of the term. Continue this process for all of the terminology cards in this set.
  5. Next, put the terminology cards in order and run the CD again. This time, do not stop the CD. Repeat each term after you hear it.

Step 14 Learn the Meanings of Terms

- ❑ Follow these steps:

  1. Again insert the first terminology card for Set 6 into Side A of your Quick-Learn Tutor. Pronounce each term and then say the meaning. Check yourself by pushing the terminology card up until you can see the meaning of the first term in the right window.
  2. Now insert the terminology card into Side B of your Quick-Learn Tutor. Push the card up until you see the meaning of the first term in the right window. Read each meaning aloud, and then say the term. Check yourself by pushing the terminology card up until you can see the term in the left window.
  3. Practice with the terminology cards several times until you're familiar with the terms and their meanings.
  4. Allow a reasonable amount of time for terminology card review. When you feel comfortable with the pronunciation and meaning of each term, go on to the next step.

Step 15 Practical Checklist

- ❑ Once again, congratulations are in order! With this lesson, you've completed your basic introduction to the bones, joints, and muscles of the upper limb. You're now ready to push up your sleeves and work through this lesson's Practical Checklist. Have fun, and be gentle (it's easy to be overly ambitious in some of these exercises, and you don't want to cause discomfort or bruising). When you're comfortable with what you've learned about the forearm and hand, go ahead and complete the Mail-in Quiz and move on to Lesson 11.

Practical Checklist—Forearm, Wrist and Hand			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
	Humerus ▸ **l**ateral epicondyle ▸ medial epicondyle ▸ supracondylar ridges	This is a quick review from Lesson 7, so you're in position for the forearm. Move to the elbow region, and palpate the lateral epicondyle, the "bump" of the distal humerus that is the "outside" bone of the elbow. Then locate and palpate the medial epicondyle, the "inside bump" close to the body. Remember that the supracondylar ridges are above the epicondyles.	Figure 7-8
	Radius ▸ styloid process ▸ shaft	Use either your own or your "client's" arm and forearm, with the forearm in palm-down position. Start at the bulge of the styloid process, just above the joint of the wrist, near the base of the thumb. Gently move up the shaft of the radius. Depending on the tone of the muscles in this region, you might not be able to feel much of the proximal half of the bone.	Figures 10-1, 10-2, 10-8, 10-9
	Ulna ▸ styloid process ▸ shaft ▸ olecranon process	Use either your own or your "client's" arm and forearm, with the forearm in palm-down position. At the distal end of the ulna, just above the wrist joint, you should feel the "bump" that is the styloid process. Follow the medial edge of this bone up the forearm (this is the shaft of the ulna), staying on the little-finger side of the forearm, up to the point of the elbow. Your fingers are now resting on the olecranon process of the ulna—the "funny bone."	Figures 10-1, 10-2, 10-8, 10-9
	Carpals **Metacarpals** **Phalanges**	Grasp the region at the wrist joint with your fingers at the back of the hand and your thumb on the inside of the wrist, at the base of your palm. Gently palpate the region across the base of the palm just beyond the wrist joint. The knobby bumps you feel across this area are some of the carpal bones. Move your thumb around to the back of your hand and palpate across the region just beyond the wrist joint, and you can also palpate the carpal bones across this area. Passively flex and extend the wrist joint to help you isolate these bones. Move forward down the hand, both back and palm, and identify and palpate the longer individual bones in the hand. These are themetacarpals. Finally, palpate all the individual finger bones, or phalanges. Remember that each finger has three bones divided by joints, and the thumb has two, for a total of fourteen in each hand.	Figures 10-1, 10-2
	Elbow joint	Grasp the medial and lateral epicondyles at the elbow between your thumb and fingers. Place your index (first) finger into the groove between the ridges at the back of the elbow. Now flex and extend your forearm to feel this hinge joint in action.	Figure 10-8
	Wrist joint (radiocarpal joint)	Grasp the wrist between your thumb and fingers, first with your thumb on the inner side of the wrist and your fingers on the back of the wrist. Flex and extend the wrist to feel this joint move. Then grasp the lateral and medial sides of the wrist joint, and move the wrist side to side to experience the joint movements of adduction and abduction.	Figure 10-6

Practical Checklist—Forearm, Wrist and Hand			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
_____	**Proximal and distal radioulnar joints**	You will want to work with your "client" for this step. Grasp the dista radioulnar joint firmly with your two hands wrapped around the joint (this joint is between the radius and the ulna just above the wrist joint). Notice what happens when your client tries to turn (pronate and supinate) her forearm. Grasp the proximal radioulnar joint at the other end of the radius and ulna, near the elbow (to have a good hold on this region, you'll want to grasp your "client's" forearm here). Have the client try to pronate and supinate the forearm, and again notice what happens. As you learned in the lesson, these two joints always work together, just as the AC/SC joints do in the shoulder/clavicle region.	Figure 10-6
_____	**Hand joints**	With your thumb and fingers, locate the junction between the hand bones (metacarpals) and the carpal bones at the base of the hand. Experiment with both active and passive movement of the hand in this region to see whether you can detect any movement at these joints. (If you squeeze the hand on the medial and lateral sides, for example, you'll easily detect movement in these joints.)	Figure 10-7
_____	**Thumb joint**	Grasp the base of the thumb near the wrist, in the thick pad of muscle on the palm side of the hand, between the thumb and fingers of your other hand. Passively flex and extend the joint at the base, then hold the joint while you actively flex, extend, abduct, adduct, circumduct and oppose the thumb.	Figure 10-7
_____	**Knuckles (between hand and base of fingers)**	Make a fist with your hand; place the fingers of your other hand on the large knuckles between your hand and fingers. Alternatively, hold one knuckle at a time between your other thumb and fingers. While resting on or holding the knuckle(s), experiment with all the movements you can create at these joints. (Remember that these condyloid joint movements include flexion/extension and abduction/adduction, which can combine to create circumduction.)	
_____	**Finger joints**	Flex and extend your fingers at the middle and end (hinge) joints while feeling the joint movements with the thumb and fingers of your other hand.	Figures 10-6, 10-7

Practical Checklist—Forearm, Wrist and Hand			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
	Elbow flexors ▸ brachialis ▸ biceps brachii (biceps) ▸ brachioradialis	Although you can locate and palpate the muscles of Figures 10-10, your own arm and forearm, you'll find it easier to work with a "client." With your client sitting comfortably in a chair, forearm supine (palm up), shake hands with her. In that position, ask your client to hold her arm in the flexed position against your resistance (as you push down on the forearm). With her arm in this resisting position, palpate the front surface of her arm and find the hard belly of the biceps. Follow the muscle down the arm to the elbow region and notice how the muscle narrows into a tendon there. Follow the biceps up the arm to where it disappears underneath the lower edge of the deltoid muscle. As you're palpating the belly of the biceps muscle, carefully identify where it rounds off to either side. Following the rounded lateral side of the biceps down the lower half of the humerus, you will feel another muscle, the brachialis, alongside the biceps that continues down into the elbow at the upper end of the ulna. Again, shake hands with your client, this time with the elbow flexed and the forearm rotated so the thumb is toward the ceiling. Have the client lift the thumb high, with the client holding that position against your resistance. You should now be able to palpate the long, tubular belly of the brachioradialis on the top (lateral) edge of the forearm. Follow the muscle down the forearm as it becomes the tendon along the styloid process of the radius (remember that this muscle will be on the thumb side of the forearm).	Figures 10-10, 10-11, 10-12
	Forearm, wrist and hand flexors	With forearm face up, flex (or have the client flex) the elbow and the hand and finger joints. Place your hand flat across the anterior forearm to feel the fibers of the group of forearm flexors. Extend and flex the forearm and hand as you palpate these muscles, noticing how they contract and relax with the movements.	Figure 10-14
	Elbow extensors ▸ triceps brachii (triceps) ▸ anconeus	Have the client lie face down (prone) on the table, with the arm bent over the side at the elbow. Palpate around the edges of the posterior deltoid and identify the triceps brachii (triceps) between the deltoid and the elbow. Find the elbow (olecranon process) and locate the tendon from the triceps there. Have client extend (straighten) the elbow joint as you apply resistance. With your other hand, identify and palpate the medial and lateral heads on either side of the wide triceps tendon. Slide your fingers to just below the elbow (olecranon process) and laterally just a little bit. Have the client bend his elbow as you identify the anconeus.	Figure 10-15

Practical Checklist—Forearm, Wrist and Hand			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
	Forearm, wrist and hand extensors	Extend your wrist and hand, and with your other hand (remember that forearm, wrist, and hand extension is relative to the anatomical position, so the back of the hand is bent back toward the forearm, with fingers spread, as if you were doing pushups). From this position, use your other hand to explore and palpate the muscles of the forearm and back of the hand. Then flex and extend the forearm and hand, noticing how the muscles contract and relax as you do so.	Figure 10-16
	Supinators ▸ biceps brachii (biceps)	Locate the biceps brachii (biceps) again (go back to the "Elbow flexors" step of this checklist if you need help locating the biceps). With your hand on the contracted biceps, supinate the forearm (turn it palm up) and notice the additional contraction of the biceps as you do so.	Figure 10-10
	Finger muscles	Spend some time flexing, extending, abducting, adducting, and rotating the joints of the knuckles as you explore and palpate their muscles. Notice which muscles contract and which relax with the different movements, to see if you can determine which are flexors and which are extensors.	Figures 10-20, 10-21
	Carpal tunnel region; median nerve	With your thumb across the region of the anterior wrist joint, gently apply pressure and palpate the area to locate the median nerve that extends through the carpal tunnel into the palm of the hand. You'll know when you've located the median nerve by the tingling sensation you feel when you apply pressure to it. If you have trouble locating the nerve at the wrist, you might be able to isolate it by palpating gently further up and down the forearm, in the region between the radius and the ulna. You can also locate the median nerve by pressing your thumb down into the center of the palm of your hand. Palpate the region until you find the "bump" that "tingles" when you move across it.	Figure 10-13

🕮 Step 16 Lesson Summary

❑ The forearm and hand are capable of many more—and more refined—movements than the arm is. For these actions, the forearm and hand require a much more complex network of bones, joints and muscles than the arm. Because various groups of muscles work so closely together—the flexors, extensors, supinators and pronators—you can learn about these groups without having to know every single muscle's name.

If you have a basic understanding of some of the more commonly used Latin and Greek anatomical root words and prefixes, you will also be able to identify many muscles' basic location and function just by looking at their names. So you can communicate intelligently with educated clients or employers even if you haven't memorized every anatomical detail.

Now that you have a good grasp on the upper limb (but gently, of course), you'll be connecting with the head and neck regions in the next lesson. And it won't be long before your practice clients are waiting in line to be included in your regular "study" schedule!

✉ Step 17 Mail-in Quiz 10

- ❑ Follow the steps to complete the quiz.

  a. Be sure you've mastered the instruction and the Practice Exercises that this quiz covers.

  b. Mark your answers on your quiz. Remember to check your answers with the lesson content.

  c. When you've finished, transfer your answers to the Scanner Answer Sheet included. Use only blue or black ink on your Scanner Answer Sheet.

  d. **Important!** Please fill in all information requested on your Scanner Answer Sheet or when submitting your quiz online.

  e. Submit your answers to the school via mail, e-mail, fax or, to receive your grade immediately, submit your answers online at www.uscareerinstitute.edu.

Mail-in Quiz 10

Select the best single answer to complete each sentence.

1. **The prefix *bi–* used together with the suffix *–ceps* in anatomical terminology means _____.**
   a. two-headed muscle with one point of origin, two points of insertion
   b. two-headed muscle with two points of origin, one point of insertion
   c. three-headed muscle with two points of origin, one point of insertion
   d. two-headed muscle with one point of origin and one point of insertion

2. **The two bones of the forearm are the _____.**
   a. humerus and radius
   b. ulna and humerus
   c. radius and ulna
   d. radius and styloid process

3. **The _____ is on the thumb side of the forearm.**
   a. ulna
   b. humerus
   c. funny bone
   d. radius

4. The finger bones are called _____.

a. carpals
b. phalanges
c. metacarpals
d. knuckles

5. The carpal tunnel is located _____.

a. at the distal end of the humerus
b. at the proximal end of the radius and ulna
c. between the carpal bones and the flexor retinaculum
d. between the carpal bones and the metacarpal bones

6. Humans normally have _____ phalanges on each hand.

a. 12
b. 14
c. 9
d. 13

7. The joint formed by the carpal bones and the radius is the _____.

a. wrist joint
b. hand joint
c. knuckle joint
d. elbow joint

8. Another name for the "funny bone" is the _____.

a. humeroulnar joint
b. olecranon process
c. styloid process
d. radioulnar joint

9. The range of motion (ROM) for the saddle joint of the thumb includes _____.

a. supination and pronation
b. protraction, retraction, opposition, flexion and extension
c. supination, pronation, circumduction and adduction
d. flexion, extension, abduction, adduction, circumduction and opposition

10. The proximal and distal radioulnar joints are examples of _____ joints.

a. hinge
b. ball and socket
c. pivot
d. condyloid

11. The (first) knuckle joints are _____ joints.

a. pivot
b. saddle
c. condyloid
d. hinge

12. The head of the radius is located _____.

a. at the proximal end of the radius
b. at the distal end of the radius
c. on the medial radius
d. between the distal ulna and the carpal bones

13. The olecranon fossa is on the _____.

a. olecranon
b. ulna
c. radius
d. humerus

14. The layer of fibrous tissue that separates the space between the radius and ulna is the _____.

a. intermissive tendon
b. supracondylar ridge
c. interosseous membrane
d. intracellular membrane

15. The two rows of four bones that articulate with the radius to form the wrist joint are the _____.

a. metacarpals
b. carpals
c. phalanges
d. intercarpals

16. The group of muscles known as the elbow extensors include the _____.

a. triceps brachii and the pronator teres
b. biceps brachii and the supinator
c. triceps brachii and anconeus
d. biceps brachii and anconeus

17. Supinators of the forearm include the _____ muscles.

a. triceps brachii and the supinator
b. biceps brachii and the pronator
c. biceps brachii and the supinator
d. anconeus and the supinator

18. The elbow flexors include the _____ muscles.

a. biceps brachii, brachialis, brachioradialis and pronator teres
b. biceps brachii, brachialis, anconeus and pronator teres
c. biceps brachii, brachialis, brachioradialis and pronator quadratus
d. biceps brachii, anconeus, pronator teres and supinator

19. The only muscle on the posterior arm is the _____.

a. biceps brachii
b. posterior flexor
c. triceps brachii
d. anconeus

20. To most easily palpate the brachioradialis, you will want your forearm in the _____ position.

a. prone
b. handshake
c. supine
d. waving

21. The muscle that often becomes inflamed in the condition known as "tennis elbow" is the _____.

a. anconeus
b. supinator
c. biceps brachii
d. pronator teres

22. The square-shaped, out-of-the-way, wrist muscle is the _____.

a. pronator teres
b. quadratus wristus
c. pronator quadratus
d. pronator radius

23. The _____ nerve passes through the carpal tunnel and plays an important role in carpal tunnel syndrome.

a. longus
b. median
c. vagus
d. femoral

24. When you're shaking hands, your wrist is making _____ movements.

a. extension and flexion
b. abduction and adduction
c. supination and extension
d. pronation and flexion

25. The wrist and hand extensors originate on the _____.

a. radius
b. distal humerus
c. ulna
d. back of the hand

Congratulations—

You have completed Lesson 10,

Movement and Support II—
The Forearm and Hand

Do not wait to receive the results of your quiz before you move on.

Lesson 11
Movement and Support III—The Head and Neck

Step 1 Learning Objectives

- ❑ After completing this lesson, you will be trained to do the following:
  - Identify bones, joints and muscles of the neck and head, including their locations respective to each other.
  - Explain the functional relationships among bones, joints and muscles of the neck and head.
  - Describe the movements of bones, joints, and muscles of the neck and head regions, using appropriate terminology.
  - Identify origins and insertions of various neck and head muscles.
  - Discuss range of motion (ROM) as it pertains to the neck and head regions, and identify ideal ROM for the related joints.
  - Locate and palpate (touch) primary bones, joints, and muscles of the neck and head on your own or your "client's" body.

Step 2 Lesson Preview

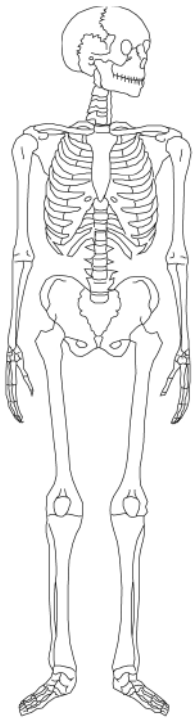
- ❑ Imagine that you had the opportunity to watch a newborn colt, kittens just a few hours old and a week-old human baby. Can you picture anything in common among these "infants"? You might describe the colt's first attempts to stand, the kittens' head and body movements as they wriggle around looking for food, and the baby's efforts to turn her head toward the sound of her mother's voice as wobbly. All these newborns have a lot more body mass than their untrained muscles can support.

  If you've ever held an infant in your arms, supporting her head because she can't hold it up yet, you have some idea of how much muscle strength and coordination she must develop over the next several months so she can hold her head up, turn it in different directions and finally learn to balance it while sitting upright. And if you've ever had a tension headache (you know, when the muscles up the back of your neck feel like steel, and you start intuitively massaging the base of your head to relieve the pain), you already know that neck and head muscles can also hold tension and stress.

In this lesson, you will learn about the essential bones, landmarks, joints, and muscles of the neck and head regions. When you combine this knowledge with your developing skills for working on the shoulder girdle, you will soon be rewarded with relaxed, satisfied clients. Helping to eliminate all those "pains in the neck" and taking the "weight" off clients' shoulders could probably keep your practice in business, even if those were the only areas you ever focused on!

In this lesson, you will continue learning how our bodies are supported and how they move by focusing on the muscles, bones and joints of the face, head and neck. A checklist is included to help you physically identify the muscles and bones in this lesson.

Before you get further into the lesson, you'll find it helpful to quickly look back over the lesson on the shoulder girdle and arm (Lesson 7). Then as you move through this lesson, think about how closely the neck and shoulder regions work together. Combined, these anatomical regions are the primary supporters of the head and all it contains (and that's a lot, even though sometimes it might not seem so). The spinal column, which is the essential connection between the brain and the rest of the body, originates in this region. And the neck is also the pathway between the head and the heart, so a thorough understanding of this area of the body is important to your study of therapeutic massage.



In this lesson, you will focus on the muscles, bones and joints of the face, head and neck.

Step 3 More Than Skin Deep

- ❑ We all know of people we think have beautiful or handsome faces, whether they're the faces of someone famous or our closest friends or family members. Underneath all the unique features of size, shape and proportion that distinguish each of us as individuals, however, our facial bones and skulls are quite similar. And contained within the bones of our skull and face is a unique and vital part of each of us—the brain and its intricate neural network.

On the outside, did you know that muscles cover much of your skull? That's why some people are so skilled at wiggling their noses, or even their ears! This covering of muscles on and around the head, face and neck, and the many nerve endings in this region of the body, make these areas some of the most responsive to, and positively affected by, therapeutic massage.

In the next step, you'll learn about the main bones of the head, with some prominent bony landmarks of the head and face, and the famous jaw joint, the TMJ. So heads up, and let's get started.

Using Your Head

The following Latin and Greek word origins and meanings will be valuable to know as you learn about the bones, landmarks, joints and muscles of the head and face:

- ***Cranio*- means *skull* in Latin.** You will encounter the term *cranial* in this and following lessons, and throughout your work as a massage therapist. For example, cranial-sacral therapy works to enhance the flow of cerebrospinal fluid from the cranium to the sacrum.
- ***Skeleton* means *dried up* in Greek.** This definition should be an easy one to remember.
- ***Suture* means *seam* in Latin.** You might have heard this term used in a medical office, particularly if you or someone you know has had stitches.

Now let's take a closer look at the bones and landmarks of the head, face and neck. Pay close attention, and you should recognize several markers along the way.

🕮 Step 4 Cranial Bones, Landmarks and Joints (Why We Might Be Hard-headed)

- ❑ As you learn about the bones of the head and face, you should be aware that there are many small and internal bones in this area of the body that you won't have reason to refer to, so we won't discuss them in this lesson. Just know that they exist, so that if you ever come across a bone name in this region that you don't recognize, it's probably one of those smaller ones.

Of the eight cranial bones, or bones of the skull, you should be familiar with six of them. These cranial bones are superficial, smooth, curved, relatively thin but strong, and all six are palpable to varying degrees. As you learn about these skull bones, look carefully at Figures 11-1 and 11-2 to see the location, shape and position of the bones and landmarks relative to each other and the rest of the skull.

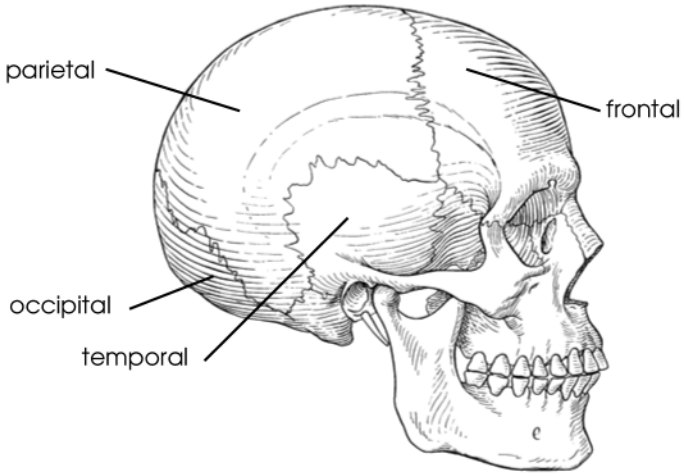


Figure 11-1: Cranial bones, lateral view

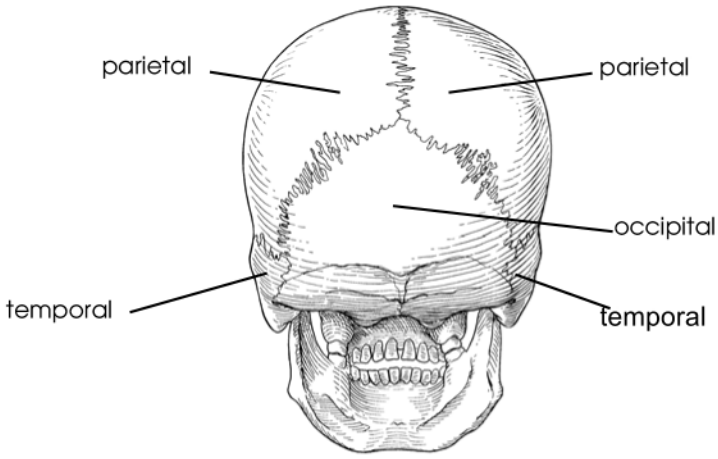


Figure 11-2: Cranial bones, posterior view

The Frontal Bone

The **frontal** bone extends over the forehead and forms the upper part of the eye socket.

The Occipital Bone

The **occipital** bone is located in the lower, posterior region of the skull, between the ears, and is also referred to just as the **occiput**. You can feel the upper portions of this bone across the back of the head; the lower portion curves under at the base of the neck and is covered by tendon and muscle tissue.

Landmarks of the Occipital Bone

The occipital bone has several bumps and a hole (no, it really doesn't need repair) that are important landmarks. These landmarks serve as articulations for joints and as a pathway for the spinal column.

- **Occipital condyles**—the knobs at the base of the occipital bone on either side of the indentation where the spinal column begins. These condyles articulate with the first cervical vertebra.

- **Foramen magnum**—As the name suggests (*foramen* means opening or hole, *magnum* means very large), the foramen magnum is the large hole at the base of the occipital bone that the spinal cord passes through before it goes through the vertebral foramens of the spinal column.

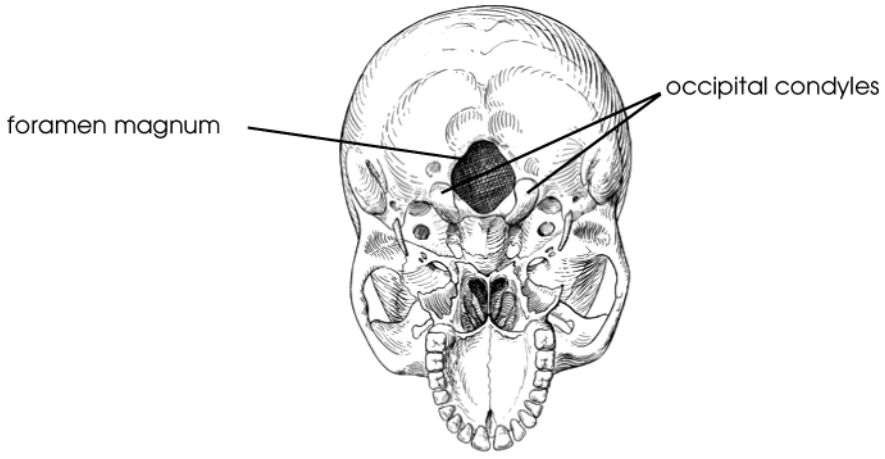


Figure 11-3: Bony landmarks of the occipital bone, inferior view

The Parietal Bones

The two **parietal** bones together create the top and much of the sides of the skull. These bones begin across the top of the occipital bone on the back of the head and go forward to meet the frontal bone at the top of the head. The two bones merge at the midline of the top of the head to form a suture called the **sagittal suture** (which, if you remember the term *sagittal* from Lesson 4, tells you that this suture, or seam, runs down the midline between the left and right sides of the skull).

Landmarks—and Joints—of the Parietal Bones

The skull has joints called **sutures**, which are located between the various plates of bone in the skull. These sutures are classified as **fibrous joints**. At birth, the cranial bones are not completely developed, and spaces exist between the bones. These gaps are called **fontanels** then. You might be familiar with the parietal/frontal fontanel because it is quite apparent in most infants at the top of their skulls. This area is often called the "soft spot." This location is where the frontal bone and two parietal bones will eventually come together and harden, but for the first few months to two years of life, the area remains somewhat soft and therefore vulnerable.

Although the sutures, or joints of the skull, are generally defined as not moveable, evidence in recent years suggests that they can undergo subtle shifts and adjustments, even when the bones have matured. Working with these subtle shifts and movements of the sutures is part of the healing specialty known as cranial-sacral therapy.

If you look again at Figures 11-1 and 11-2, you can see that the parietal bones articulate with each other and with the other major cranial bones—frontal, occipital and temporal. These points of articulation are the sutures of the skull. You can easily remember these sutures by remembering their locations:

- Parietal/frontal
- Parietal/parietal
- Parietal/occipital
- Parietal/temporal

The Temporal Bones

The two **temporal** bones are located on either side of the head in the region around the ears. You are probably already familiar with the tender area just behind your cheekbone region and slightly in front of your ears, which we commonly refer to as our "temple" area.

Landmarks of the Temporal Bones

A number of bony landmarks exist on or in conjunction with the temporal bone. Some of these landmarks occur in conjunction with other bones, but because they have the temporal bone in common, we have included them here.

- **Mastoid process**—the large, superficial bump directly behind the earlobe (*mastoid* means *breast* in Greek, explaining its use here to describe the large bump of this bone). The mastoid process is an attachment site for several muscles.

- **Styloid process**—a fang-like protrusion of the temporal bone that lies behind the earlobe between the mastoid process and the posterior edge of the mandible. The styloid process is a deep landmark and therefore not directly palpable. It is the attachment site for several muscles and ligaments.

- **Temporal fossa**—the broad, shallow depression on the temporal bone, just superior to the ear. The temporalis muscle nearly fills the temporal fossa.

- **Mandibular fossa**—a shallow depression on the temporal bone, just anterior to the opening to the ear canal, which articulates with the mandible.

Look closely at Figure 11-4 to be sure you understand where all these landmarks are located.

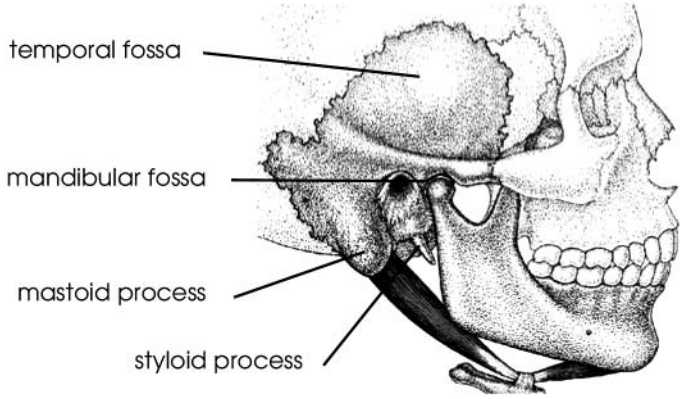


Figure 11-4: Bony landmarks of the temporal bone

Step 5 Facial Bones, Landmarks, and Joints (Why We Look So Good or We Don't)

- Humans have fourteen bones in the facial region, and we will discuss eight of those bones and their key landmarks in this lesson. Once again, the other six bones are very small or internal, and you aren't likely to need to know about them specifically. The eight facial bones you should know about are described in the following sections.

  You can see the facial bones in Figure 11-5. Refer to this diagram as you work through this step to be sure you understand the locations of the bones and landmarks and their relationships to each other.

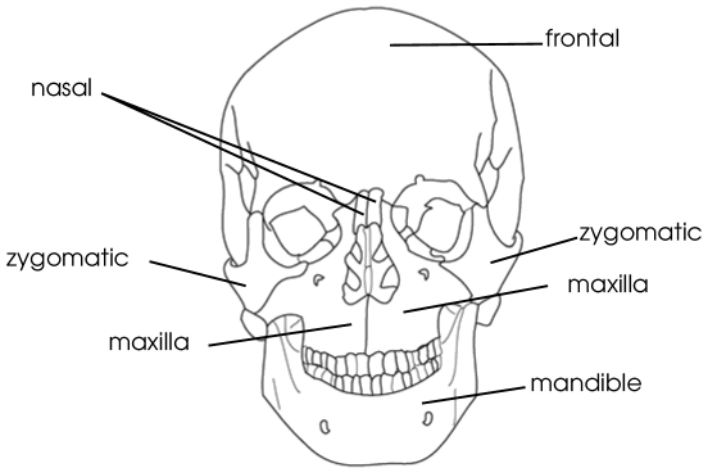


Figure 11-5: Facial bones, anterior view

The Nasal Bones

The two, small **nasal** bones are located at the bridge of the nose, between the eyes. The nasal bones adjoin both the frontal and maxillary bones.

The Zygomatic Bones

The **zygomatic** bones are commonly known as the **cheekbones**. As you can see in Figure 11-5, these bones also form the side and some of the lower eye socket.

Landmark of the Zygomatic (and Temporal) Bone

One bony landmark is related equally to the zygomatic and temporal bones. This landmark is the **zygomatic arch**. It is formed by a combination of the temporal and zygomatic bones. You can see the zygomatic arch in Figure 11-6.

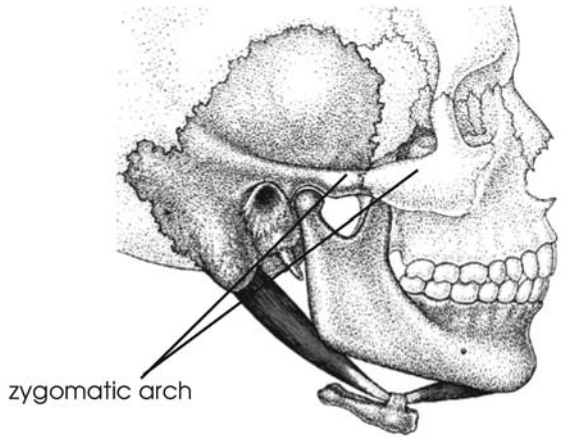


Figure 11-6: Zygomatic arch formed by temporal and zygomatic bones

The Maxilla Bones

The two **maxilla** (or **maxillary**) bones form the center face bones, including the small area directly under the eyes, the surface around the nose, and the upper jaw, which holds the upper teeth.

The frontal bones and the maxillary bones have **sinuses** within them—holes in your head that lighten you up (air is much lighter than bone) and create resonance chambers for your voice. Two other internal bones in your head also have sinuses in them.

Landmarks of the Maxilla (and Frontal and Zygomatic) Bone

The unique coming-together of the maxilla, frontal and zygomatic bones on each side of the face creates two large, round openings that we commonly refer to as **eye sockets**. The anatomical term for an eye socket is **orbit**. Although you've certainly seen enough pictures of skeletons to know what the orbits look like, you probably haven't thought about the fact that each orbit is actually created by six different bones coming together (you're learning about three of these bones in this lesson). You can see how the orbits are created in Figure 11-7.

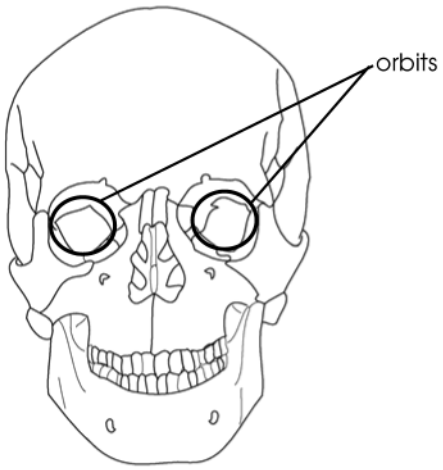


Figure 11-7: Orbits (eye sockets)

The Mandible Bone

The **mandible** is the **jawbone**. This large, curved bone wraps around the entire lower front portion of the skull. The mandible provides the base into which the lower row of teeth is set and forms the chin.

Landmarks of the Mandible Bone

The mandible, or jawbone, includes several bony landmarks that you should be familiar with:

- **Ramus of mandible**—the flat, posterior, vertical portion of the mandible that forms the back edge of your jaw. The ramus is easy to palpate.
- **Mandibular condyle**—the superior end of the most posterior section of the mandible. The condyle is located just in front of the ear canal. The deep head of the condyle is the portion of the mandible that articulates with the temporal bone to form the TMJ.
- **Coronoid process**—the anterior ridge located just about an inch (in adults) in front of the mandibular condyle.
- **Angle of mandible**—the posterior, lower corner of the mandible, or jawbone.

Study Figure 11-8 to be sure you can identify and remember the locations of these bony landmarks of the mandible.

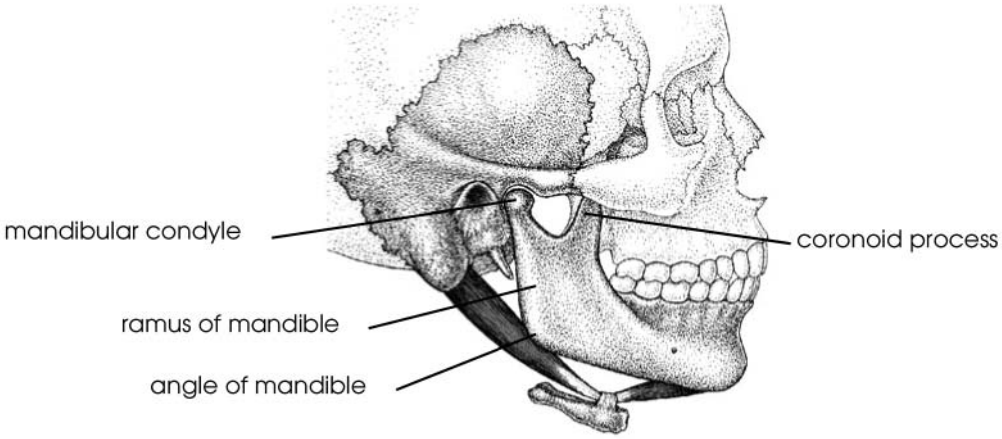


Figure 11-8: Bony landmarks of the mandible

The TMJ (Temporomandibular Joint)

The **TMJ** (**temporomandibular joint**) is the jaw joint. The mandibular condyle and mandibular fossa articulate at the base of the temporal bone to create this *modified hinge* joint at each side of the mouth. The TMJ contains an **articular disk** made of cartilage and shaped like a lifesaver, which lies on top of the condyle and protects the bony surfaces at this joint. When the mandible depresses (lowers), the condyle and disk together move forward (anterior) and downward (inferior). When the mandible elevates (raises), the condyle and disk together move backward (posterior) and upward (superior). You can see the location of the TMJ in Figure 11-9.

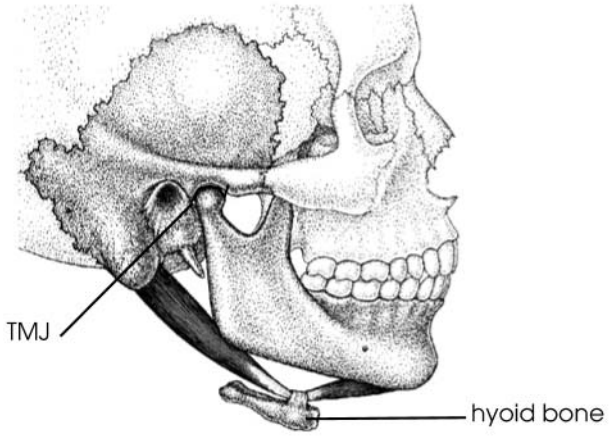


Figure 11-9: TMJ (temporomandibular joint) and hyoid bone

The Hyoid Bone

The **hyoid** bone is the horseshoe-shaped bone that is located in the throat, just above the thyroid gland. The hyoid is approximately an inch (in adults) across and lies in line with the base of the jaw. This bone moves up and down when you swallow, and you can palpate it by placing your fingers on either side and moving it horizontally. The hyoid bone is unique in the respect that it is the only bone in the body that doesn't articulate with another bone. (Although not technically a facial bone, we have included the hyoid bone here because it anchors the tongue, which is in the facial region.) Look at Figure 11-9 to see where this bone is located.

Step 6 Neck Bones (Why We Might Have or Be a Pain in the Neck)

- ❑ Now that you have your head together (at least its bones), let's take a look at the significant bones of the neck region. You've already been introduced briefly to these bones in previous lessons, where you learned a little about the cervical vertebrae. The **cervical vertebrae** are the first seven vertebrae of the spinal column, and they're labeled C1, C2, C3, C4, C5, C6 and C7. Remember that the *C* stands for *cervical*, which means having to do with the *neck*; the numbers represent the location of each vertebra, in order, starting with the top-most one at the base of the skull.

  Figure 11-10 shows the cervical vertebrae relative to each other and to the rest of the spinal column.

  At this point, an understanding of this basic structure is an important foundation for learning about the cervical vertebrae in this lesson, and about the thoracic and lumbar vertebrae in future lessons.

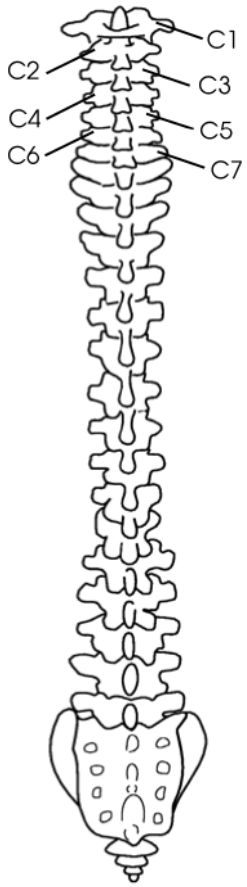


Figure 11-10: Cervical vertebrae, posterior view

Structure of the Spinal Vertebrae

In general, vertebrae have the same basic components, with the cervical vertebrae being the most delicate, and the lumbar vertebrae the most heavy-duty. As you review the common elements, look at Figure 11-11 to develop a sense of where each "part" is located and how it works with the other parts.

- **Body**—the thick part of the anterior portion of the vertebra.

- **Spinous processes**—the processes that stick out posteriorly on the vertebra. (Remember that *process* means *going before*.)
- **Transverse processes**—the processes that stick out, or run transversely, off the vertebra.
- **Facets**—the small, curved surfaces next to the transverse processes of each vertebra, which articulate with the next vertebra. (*Facet* means *little face* in French.)
- **Foramen**—a passage or opening on the vertebra. The **vertebral foramen** is the central, large opening in each vertebra through which the main spinal cord passes. So talking on the phone while you're holding the receiver against your neck with your head can severely crimp the blood flow to your brain temporarily!

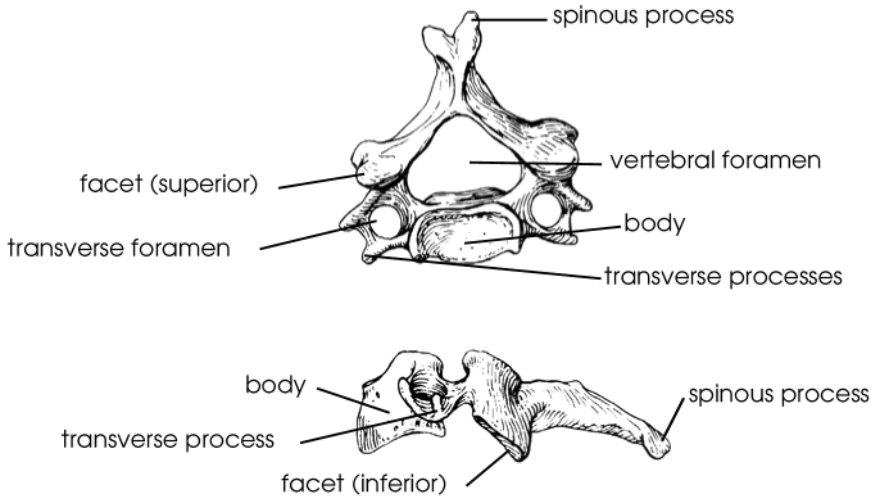


Figure 11-11: Cervical vertebrae, superior and anterior views

Intervertebral discs are pads of cartilage that separate the spinal vertebrae and absorb the impacts the spine undergoes. Intervertebral discs are designed to distribute force evenly, and one of their primary functions is to cushion the bones and serve as shock absorbers, so the bones don't collide with each other as we walk, which would hurt a lot. Discs also help give the spine its curve, strength, and flexibility. Our spine has a total of 23 discs, which are responsible for about one-fourth to one-third of the length of the spinal column. Intervertebral discs have two parts:

- An outer, fibrous casing of cartilage, which is actually made up of concentric rings of cartilage fiber.
- A semi-fluid center that shifts around like the bubble inside a carpenter's level, distributing force as you move.

Hyaline cartilage (the same sort found in synovial joints) lies between the bones and the disc to help keep the disc in place. If the disc is suddenly called upon to absorb a tremendous amount of force, either by sudden impact or by very heavy lifting, it can tear away from its foundations. This condition is known as a **slipped disc**. The outer cartilage in the disc can also tear or crack as a result of injury, age or poor nutrition. This condition is called a **ruptured disc** or **herniated disc**. When a disc ruptures, some of the inner, gel-like fluid can leak into tissues or press upon nerves, causing excruciating pain. Because cartilage doesn't have a blood supply, it heals slowly, and sometimes not at all. Disc problems are contraindicated in massage therapy.

You can see the location of the intervertebral disc in Figure 11-12.

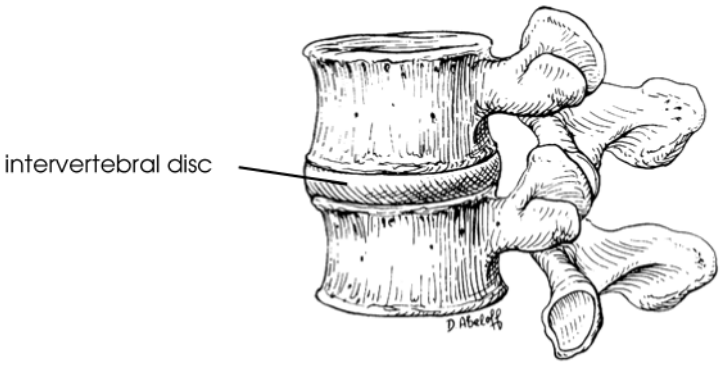


Figure 11-12: Intevertebral disc

When we are in an upright position (sitting, standing), the pressure of body weight and gravity compresses the discs. When we lie down, the discs have the opportunity to "bounce back." In fact, we are somewhere between one-fourth to one inch taller in the morning than we are in the evening, because the discs flatten out after a day of being upright and then decompress after we lie down for a while.

So if you or your clients tend to spend a lot of time standing or sitting upright, you now have a good reason to lie down and rest periodically for 10 minutes or so during the day, to keep your vertebral region healthy. The healthier we can keep our vertebral discs, the longer they will keep us straight (so to speak).

Vertebral Bones, Landmarks and Joints Combined: They're Special!

You learned previously that the C1 and C2 vertebrae are shaped differently from the other cervical vertebrae, and these two vertebrae form special joints that let you nod and shake your head. These two vertebrae, the spinal joints and the C7 vertebra, deserve some special attention.

As you know by now, the flexibility of a joint depends both upon what kind of joint it is and where the joint is located. Although the number of joints in the head and neck regions is limited, the joints support varied ranges of motion (ROM) and flexibility.

Most of us aren't quite as flexible as the pink flamingo that can turn its head around backwards and tuck it in for a good night's sleep. But when you think about all the positions into which we do manage to put our heads (up, down, around, behind, under and over, to name a few), it's no wonder that we sometimes overdo the movements the joints are designed to accommodate. Of course, those are the times when a good massage might be in order, so you're preparing for a useful profession!

Toward that goal of becoming a good massage therapist, here is some more information about the cervical spine.

Atlas

Atlas (C1)—With its flat, ring-like structure, this first vertebra of the neck has large facets that articulate with the condyles at the base of the occipital bone just above it to form the **atlantooccipital joint**, commonly known by its nickname, the **atlas joint**. (The atlas supports the skull just as, in Greek mythology, Atlas supports the heavens.) The ROM of the atlas joint is slight, rolling rotation, nodding, and slight tilting. Visualize how this joint works as you look at Figure 11-13.

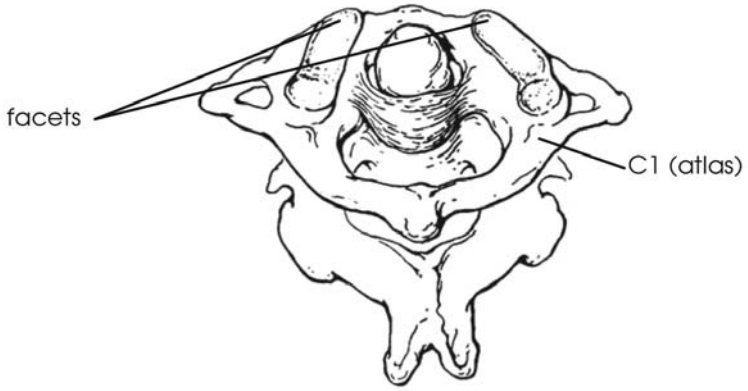


Figure 11-13: Atlas

Axis

Axis (**C2**)—This second vertebra of the neck also has a unique structure. The *pivot* joint formed by the articulation between the C1 cervical vertebra and the **odontoid process** (**dens**) of the C2 cervical vertebra is nicknamed the **axis** (**atlantoaxial**) **joint**. The ROM of the axis joint is rotation (of the C1 vertebra around the odontoid process, as in shaking the head "no"). Picture how this joint works as you look at Figure 11-14.

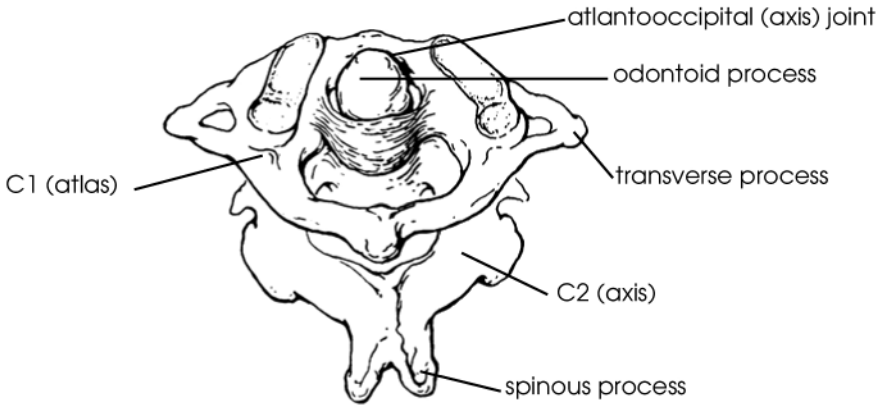


Figure 11-14: Axis (atlantoaxial) joint

You can try to isolate the movements of the atlas and axis as you move your own head, first nodding and tilting slightly, then rotating, or turning, your head laterally back and forth, but you'll probably find that you really can't tell which vertebrae are actually involved with the various movements. However, both joints working together do let you make these movements with your head and neck.

Intervertebral Facets

The **intervertebral facets** actually form the joints of the cervical spine. These facets are the portions of the vertebrae that articulate with each other when the vertebrae move. Look at Figure 11-15 to see where these spinal joints are located. These joints are *plane* joints and allow flexion, extension, lateral flexion (side-bending) and rotation (following the axis). They are nicknamed according to their vertebrae (C3/C4, C4/C5, etc.).

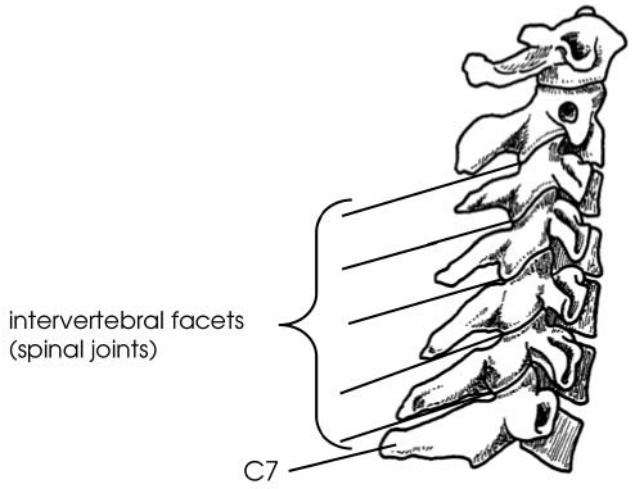


Figure 11-15: Cervical vertebrae

The 7th Cervical Vertebra

The last of the cervical vertebrae, **C7**, is located at the base of the neck. C7's spinous process protrudes farther than those of C4, C5 and C6, so you can use this vertebra to help you locate other structures in the upper back and neck regions. If you bend your head forward, the first big bump you feel at the base of the neck is the spinous process of C7. (In Figure 11-15, you can see the extension on the spinous process of C7 compared to those of the other cervical vertebrae.)

At the Neck, Go South and Find Other Landmarks

You were briefly introduced to the trachea in an earlier lesson. The **trachea**, or what we commonly call the **windpipe**, is a ribbed tube made of cartilage that is located in the center of the anterior neck. It's very important not to press directly on the trachea because it's quite sensitive to pressure.

As you move down the throat, between the hyoid bone and the sternum are the **thyroid cartilage** and the **thyroid gland**. You know the thyroid cartilage as the **Adam's apple**, which is most visible on adult males. We won't go into detail about the thyroid gland at this point, but as a massage therapist you should know that if you see a scar at the base of your client's throat, the scar is probably due to removal or partial removal of the thyroid gland or possibly one or more of the small, kidney-shaped **parathyroid glands** that lie behind the thyroid gland. (The parathyroid glands are the body's primary calcium regulators.)

Look closely at Figure 11-16 to see how the hyoid bone, the trachea and the thyroid cartilage all "stack up."

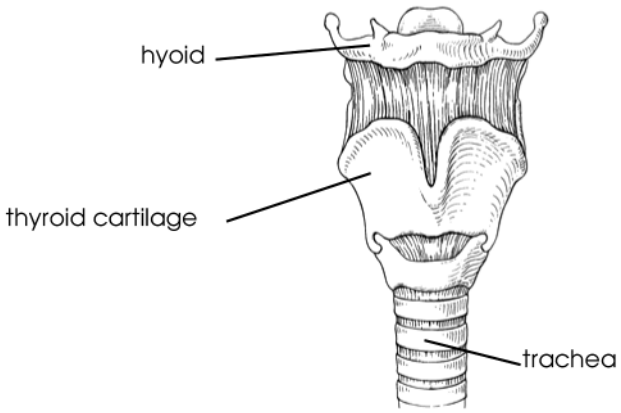


Figure 11-16: Anterior neck, including hyoid, trachea, thyroid cartilage

Go to the Head of the Body—and Breathe!

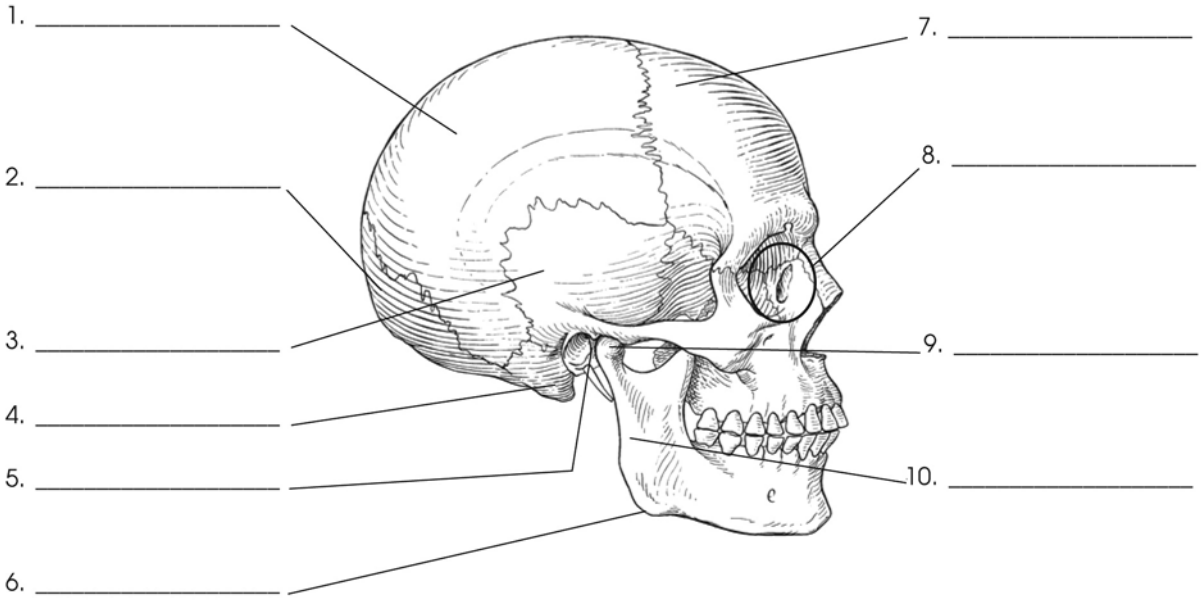
Time for a deep breath! You've come to the end of all the various pathways and intersections on this part of the journey through the bones, joints and landmarks of the head, face and neck regions that you need to know about for now. If you aren't quite sure about all the relationships and connections, take a little extra time and retrace your steps until you can move smoothly through the details without getting lost. And remember to take time, look around and enjoy the landmarks along the way.

You should now have a fairly clear map in mind of the main bones, joints and bony landmarks of this part of the body. You should also have a sense of the key intersections among the cervical vertebrae and the surrounding areas, and of the general structure of the spinal vertebrae.

✍ Step 7 Practice Exercise 11-1

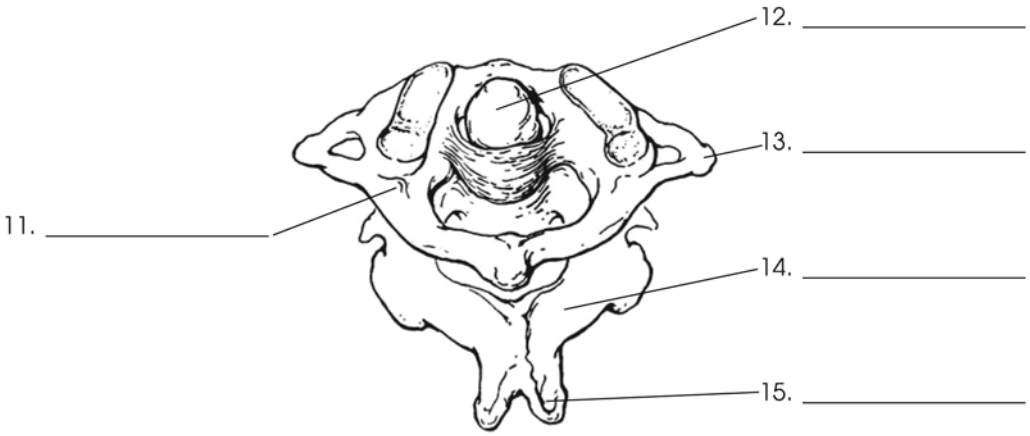
❑ For items 1 through 10, select the correct term from the list to label each of the bones, bony landmarks and joints in the following diagram.

ramus of mandible	occipital	orbit
angle of mandible	parietal	frontal
mandibular condyle	temporal	TMJ
mastoid process		



For items 11 through 15, select the correct term from the list to label the diagram of the atlas (C1) and the axis (C2).

spinous process	axis
odontoid process	atlas
transverse process	

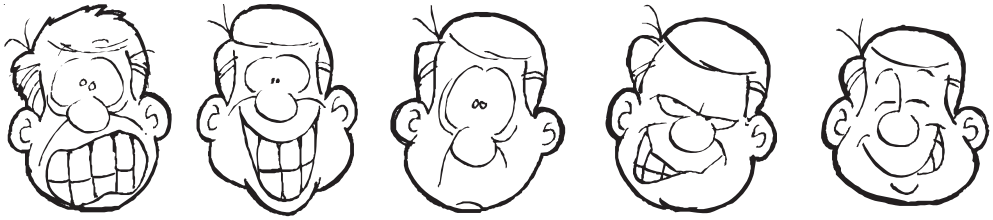


Step 8 Review Practice Exercise 11-1

- ❑ Compare your answers to Practice Exercise 11-1 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 9 Muscles of the Head and Neck

- ❑ Okay, time for a little wake-up exercise. See how many expressions you can make with your face: Smile, frown, worry, wink, wiggle your nose (yes, you can!), look impish, say "Cheese!" Open your mouth as wide as you can and then close it. Now turn your head left and right as far as you can, turn your chin up toward the ceiling and then down toward the floor. Finally, roll your head around in a full circle from left to right and then from right to left. Try to wriggle your ears by just telling yourself to do so (no fair using your hands).



Time for a little wake-up exercise! Try these expressions.

Now that you're probably feeling quite silly, are your head, face and neck muscles also feeling more relaxed? If they are, you probably hadn't even noticed they were tight before. So you're ready to find out about some of the muscles that let you do all those things. And if these muscles feel more relaxed to you now, you can understand just a little better why head massage and facials are something most people really appreciate, whether they "need" them or not.

The head, face and neck regions have many muscles—more than 30 pairs to be exact—including quite a few small ones. We communicate lots of emotions with our faces, so we need lots of muscles to do so. (Horses, unlike us, communicate more with their ears, so they have many more muscles that control their ears than we do. In fact, some people have no conscious control over their ear muscles; so if you weren't able to wiggle your ears earlier, don't be concerned.) For this course, however, you won't be learning about many of these smaller or interior facial muscles. We'll focus primarily on the larger, more superficial and most obvious muscles of the face. Then we'll introduce you to the important muscles of the neck and shoulder region that are movers of the head and neck.

Face Muscles

We are going to move around the face and talk about three main muscles that help us do that—the frontalis, the temporalis and the masseter muscles. You can probably guess their locations, and maybe even some of their movements by this time, just by looking at the muscle names.

Before we talk about the facial muscles, though, you need to know one other term: *aponeurosis*. Remember from previous lessons that throughout the body are layers of fascia, or tendinous tissue. Fascia covers muscles, and it also becomes the material that makes up the ligaments and tendons. Some parts of the body include broad, flat regions of fascial tissue that also serve as the connecting point for muscles, such as the thoracolumbar fascia that lies across the lower back region and the fascial region in the palm of the hand, both of which were mentioned in earlier lessons. Another anatomical term for these broad layers of fibrous membrane or fascia is **aponeurosis**.

A large sheath of this fibrous membrane stretches across the top of the skull, and a number of muscles attach to it. You can just remember this particular facial membrane for now as the **aponeurosis of the head** (its official name is *galea aponeurotica*, just in case you want to keep your Latin fresh), commonly called the **scalp**. You can see the region of the skull covered by this aponeurosis in Figure 11-17.

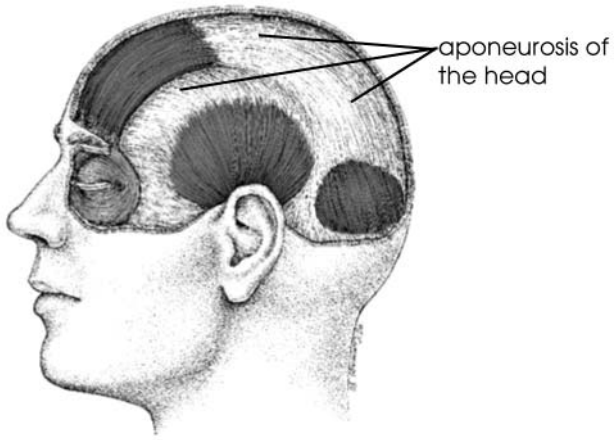


Figure 11-17: Aponeurosis of the head (galea aponeurotica)

With that in mind, let's look closely at the three facial muscles you should know for this lesson.

- **Frontalis**—As its name tells you, the frontalis muscle lies over the frontal part of the face, in the region we call the forehead. The frontalis muscle originates in the aponeurosis of the head and inserts in the skin of the eyebrows and the root of the nose. Based on this location, you might already have guessed that the movements of the frontalis muscle lift the eyebrows and wrinkle the forehead. (By the way, can you lift just one eyebrow at a time with this muscle? Just checking.) Look at the location and placement of this muscle in Figure 11-18.

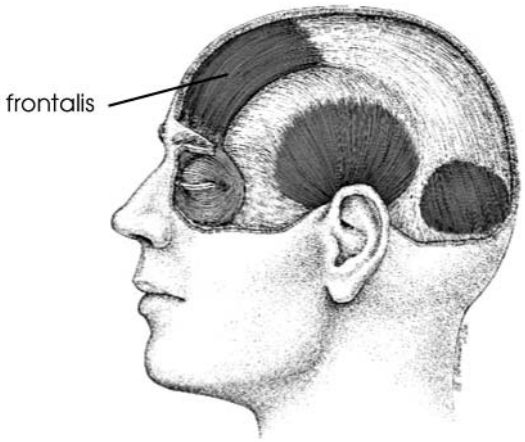


Figure 11-18: Frontalis muscle

- **Temporalis**—Again, its name tells much of the story about this muscle. The temporalis muscle lies across the temporal bone and temporal region of the skull. The temporalis has a very broad origin over a section of the aponeurosis of the head and a bony origin in the temporal fossa, and it inserts in the coronoid process of the mandible. The primary actions of the temporalis muscle are to close the jaw and to maintain the jaw in position when it's at rest (so we're not walking around with our mouths hanging open all the time). You can see the positioning of this muscle in Figure 11-19, and how it functions based on its location.

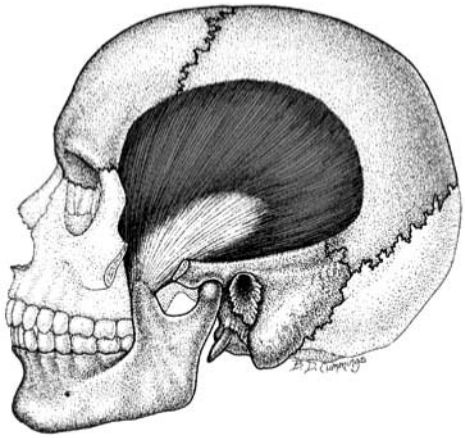


Figure 11-19: Temporalis muscle

- **Masseter (chewer)**—The masseter is the major muscle involved with chewing, and it also plays a role in swallowing and talking. Anatomically, the movement of the masseter is to close the jaw and elevate the mandible. The masseter originates in the zygomatic arch and inserts at the angle and ramus of the posterior mandible.

  Don't chew on this for long, but you might find it interesting that the masseter muscle (*masseter* means *chewer* in Greek) is the strongest muscle for its size in the human body. To make the point, although not a pretty picture, the two masseter muscles on either side of the face can exert a combined force of close to 150 pounds of pressure, which is plenty to bite off a finger. Look at the location of this muscle in Figure 11-20 and consider how its placement allows it to be so strong.

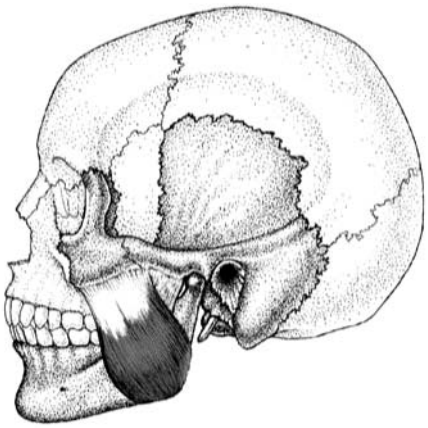


Figure 11-20: Masseter muscle

These three facial muscles are quite accessible and palpable. You'll have the chance to practice locating and palpating them later in the lesson, when you work through the Practical Checklist.

Neck and Head Muscles

How's your head doing? If we've timed it well, you should be ready to exercise the brain "muscle" just a little bit more to learn about the muscles that help you keep your head upright and your neck movable. As a massage therapist, you will tend to use these muscles a great deal as you practice your profession on others.

Once again, there are more muscles in these regions than you will learn about in this course. We've selected muscles for you to learn that are most prominent, most involved in the primary movements of the neck and head, and therefore also the ones most likely to need your attention as a massage therapist.

- **Scalenes**—The scalenes are three muscles located on the side of the anterior neck, with a group of scalenes on each side of the neck. The scalenes originate at the transverse processes of the cervical vertebrae. They insert on the anterior lateral regions of the first and second ribs. Because of their attachments, the scalenes are involved in flexion and rotation of the neck and in lifting the ribs. Look at Figure 11-21 to see where the scalenes originate and insert.

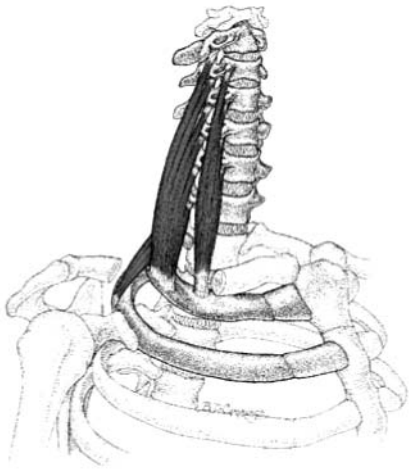


Figure 11-21: Scalene muscle group

- **Splenius muscles**—The two splenius muscles are the splenius capitus muscle and the splenius cervicus. The **splenius capitus** is a long muscle located along the upper back and posterior neck. It originates in the spinous processes of the C7 through T6 vertebrae, and its fibers run diagonally to insert into the mastoid process and the lateral occipital bone behind the ear. The actions of the splenius capitus are to extend, rotate, and laterally flex the head.

  A supporting muscle to the splenius capitus is the **splenius cervicus**. The splenius cervicus originates in the spinous processes of the T3 through T6 vertebrae and inserts in the transverse processes of the upper cervical vertebrae. This muscle assists the splenius capitus in its motions.

  You can see both splenius muscles in Figure 11-22.

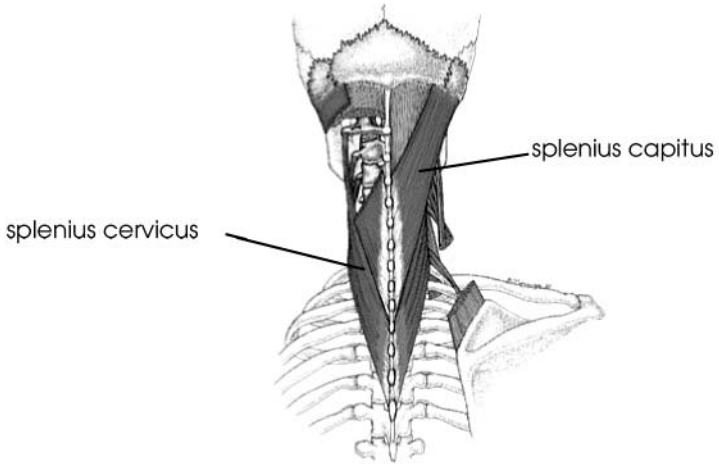


Figure 11-22: Splenius muscles: splenius capitus and splenius cervicus

- **SCM** (**sternocleidomastoid**)—This muscle is one of the most visible muscles in the region, particularly if you turn your head to the side. The SCM muscle is located on the lateral and anterior sides of the neck, and it has two heads. Its name (again) tells you a lot about the muscle and should also make remembering the name easier. The SCM has a slender sternal head that originates at the manubrium of the sternum (remember this term?) and a flat clavicular head that originates on the medial clavicle. Both heads merge and attach to the mastoid process behind the ear.

  When you turn your head sideways, the SCM usually protrudes vertically as the long, tight muscle up the side of your neck opposite from the direction you've turned your head. If you study the attachments of this muscle, which you can see in Figure 11-23, you can probably figure out its basic movements. The SCM's movements are to flex the head and neck (against gravity or resistance), rotate the head, and laterally flex the head (as when you bend your head sideways toward your shoulder). Practice these movements, including rotating and laterally flexing your head in both directions, with your fingers on your SCMs, and notice how they contract and lengthen as you move.

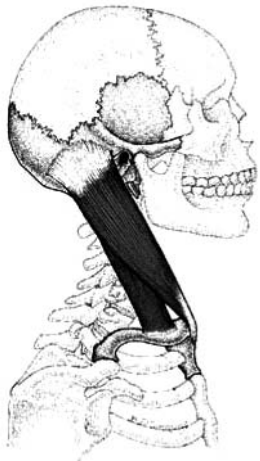


Figure 11-23: SCM (sternocleidomastoid) muscle

- **Trapezius**—The **trapezius** (*traps*, for short) is a very large, flat muscle that extends across the back, posterior shoulders and up the back of the neck. The traps originates over a broad area, from the occipital bone at the base of the neck, and from the region of the spinous processes from the C7 through T12 vertebrae, which extend from the base of the neck down through the middle of the back, as you can see in Figure 11-24. The trapezius has a broad base of insertion points, including the acromion process and spine of the scapula and on the lateral clavicle. For now, we will focus on only the upper fibers of the trapezius. This part of the muscle is commonly referred to as the *upper traps*. The primary movements of the upper traps elevate the scapula and extend the head, both of which should make sense if you visualize them as you look at Figure 11-24 and imagine the muscle fibers shortening as they contract.

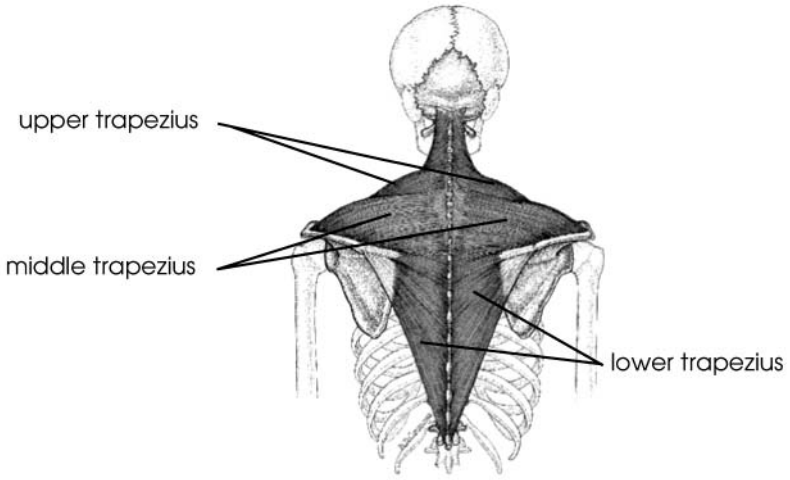


Figure 11-24: Trapezius muscle

- **Levator scapula**—This muscle again "speaks for itself" through its name. The **levator scapula** is deep to the upper trap, and it assists the traps to elevate and retract the scapula, as when you shrug your shoulders. It also works with several other muscles to laterally flex the neck. If your muscles are feeling tight in the lateral neck and upper shoulder areas, the levator scapula is often a prime suspect when you're trying to locate the muscular source of the tension. The levator scapula originates in the transverse processes of the C1 through C4 vertebrae and inserts in the superior angle of the scapula, as you can see in Figure 11-25.

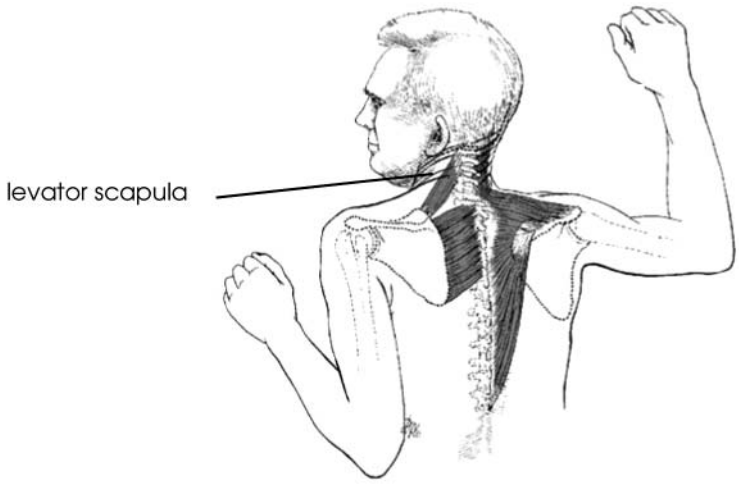


Figure 11-25: Levator scapula muscle

- **Suboccipital muscles**—This last group of muscles of the posterior back region are small, but mighty. The **suboccipital muscles** include eight muscles that are the deepest muscles of the upper, posterior neck. These muscles play a part in stabilizing the axis and atlas joints and in movements such as tilting and rocking the head.

- The suboccipital muscles originate either in the atlas or axis and insert mostly in the base of the occiput, with two muscles inserting in the transverse processes of the atlas. You can best locate and palpate this group of muscles at the base of the occiput, just above the C1 (atlas) vertebra.

- With tension in the back of the head and posterior neck, the suboccipital muscles are often tight. Clients who are experiencing a headache from tension in this region often also experience great relief when the suboccipital muscles are massaged and softened.

- Look closely at Figure 11-26 to see the individual muscles of the suboccipital group.

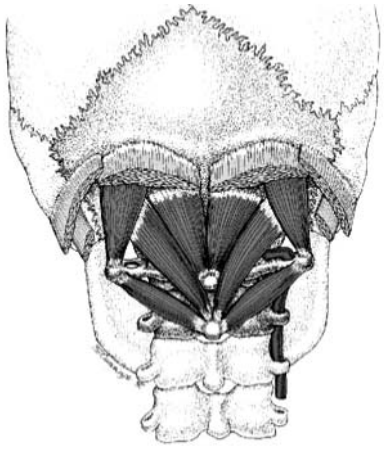


Figure 11-26: Suboccipital muscle group

Heading Out

This concludes all the specific bones, joints, landmarks and muscles that you need to know for now in the head, face and neck regions. You're moving through lots of information at a steady pace, and you should be feeling really good about that! As soon as you complete the following Practice Exercise, you'll be ready, once again, for the active part of the lesson as you work through the Practical Checklist. Remember to continue reviewing and practicing your anatomy flashcards, and move slowly and steadily as you continue through the rest of the lesson.

So head up, chin firm, twitch your nose a little (who knows, the answers might even come to you more easily) and continue with confidence.

✍ Step 10 Practice Exercise 11-2

❑ Match each term on the left with the definition or description on the right.

1. _____ **frontalis**
2. _____ **temporalis**
3. _____ **masseter**
4. _____ **scalene**
5. _____ **splenius**
6. _____ **SCM (sternocleidomastoid)**
7. _____ **trapezius (traps)**
8. _____ **levator scapula**
9. _____ **aponeurosis**
10. _____ **suboccipal muscles**

a. Originates in the transverse process of C1 through C4 and inserts into the superior angle of the scapula

b. a flat muscle that extends across the back, posterior shoulders, and up the back of the neck

c. usually protrudes vertically as the long, tight muscle on the front of your neck opposite the side toward which you've turned your head

d. a group of three muscles deep in the neck

e. two muscles in the back of the neck that extend and rotate the head

f. the strongest muscle for its size in the entire body

g. the fibrous membrane that covers the top of the skull

h. helps you lift your eyebrows and wrinkle your forehead

i. its primary actions are to close the jaw and to maintain the jaw in position when it is at rest

j. eight muscles that are the deepest muscles of the upper, posterior neck

Step 11 Review Practice Exercise 11-2

- ❑ Compare your answers to Practice Exercise 11-2 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 12 Anatomy Flashcards

- ❑ Go ahead and take out your Head and Neck Flashcards. You'll notice that they show the muscles, joints and bony landmarks of the head and neck region. On the back of muscle cards, you'll see the origins, insertions and actions listed for each.

  Make it a goal to learn two of the flashcards each day. Don't get bogged down in memorizing the origins and insertions—that knowledge will come with experience. While it's a good idea to become familiar with the names and origins and insertions, make it a goal to really learn the actions of each muscle, along with the bony landmarks and joints of the region.

  Knowing the bones, joints, muscles and their actions is the foundation of your massage therapy hands-on skills. Just take it one step at a time—your anatomy flashcards make it easy!

Step 13 Pronouncing Terms

- ❑ Follow these steps:

  1. Take your Quick-Learn Tutor and Set 7 terminology cards out of your Quick-Learn Tutor Kit. Insert the first flashcard for Set 7 into Side A of the Tutor.
  2. Put your pronunciation CD in your CD player.
  3. Listen to each term as it's pronounced on the CD. After you hear the term, put the CD player on pause.
  4. Look at the term in the left window of your Quick-Learn Tutor and practice pronouncing the term aloud several times until you can pronounce it correctly and easily. Push the terminology card up and read the meaning of the term. Continue this process for all of the terminology cards in this set.
  5. Next, put the terminology cards in order and run the CD again. This time, do not stop the CD. Repeat each term after you hear it.

Step 14 Learn the Meanings of Terms

- ❑ Follow these steps:

  1. Again insert the first terminology card for Set 7 into Side A of your Quick-Learn Tutor. Pronounce each term and then say the meaning. Check yourself by pushing the terminology card up until you can see the meaning of the first term in the right window.
  2. Now insert the terminology card into Side B of your Quick-Learn Tutor. Push the card up until you see the meaning of the first term in the right window. Read each meaning aloud, and then say the term. Check yourself by pushing the terminology card up until you can see the term in the left window.
  3. Practice with the terminology cards several times until you're familiar with the terms and their meanings.
  4. Allow a reasonable amount of time for terminology card review. When you feel comfortable with the pronunciation and meaning of each term, go on to the next step.

Step 15 Practical Checklist

- ❑ You should know the basic routine by now for the hands-on portion of these lessons, but we do want to caution you that the regions of the head, face, and neck are full of all kinds of sensitive areas that include many tiny muscles, sinus cavities, nerve endings, and everything it takes for us to express lots of emotions, eat, breathe, hold our heads up high, and on and on. So be particularly sensitive when exploring these areas, and check in regularly with your "client" as you palpate the face and neck. Otherwise, have fun, and see how much you can learn, and how much of what you've already learned you can understand by touch, as you work through the steps of the Practical Checklist.

Practical Checklist—Head, Face and Neck			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
	Cranial Bones and Landmarks ▸ occipital (occiput) ▸ parietal • aponeurosis of the head ▸ temporal • mastoid process ▸ frontal	Place your flattened hands/fingers on the back of your head between your ears. Palpate gently over this region, which is the **occipital** bone. Place your flattened hands and fingers on the top of your head, with one hand on either side of center, ends of fingers toward the midline of the head. Your fingers are resting on the **parietal** bones. Explore this region gently. Apply slight pressure to the area and try to move the skin on the top of the scalp. In this region is the **aponeurosis of the head**. Move your hands and fingers down the sides of your head and palpate the regions above, just in front of and behind your ears. This is the location of the **temporal** bones. As you palpate this region, notice the large, superficial bump directly behind the earlobe, which is the **mastoid process**. Move your fingers forward and onto the region of your forehead. Gently explore and palpate this area, which is the main surface of the **frontal** bone.	Figures 11-1, 12-2, 11-4, 11-17
	Facial Bones and Landmarks ▸ zygomatic ▸ nasal ▸ maxillary ▸ mandible • angle • ramus	Place your flattened fingers on your cheeks, below your eyes. The bones here are the **zygomatic** bones. Grasp the narrow, bony region at the top of your nose between your eyes with your thumb and first finger. These are the two **nasal** bones. Move downward on these bones and notice where they stop about midway down the nose; the rest of your nose is cartilage tissue rather than bone. Gently place your flattened fingertips under the zygomatic bones and continue under the nose, palpating across this region that contains your upper row of teeth. This bony surface above the teeth is the **maxillary**. With the thumb and fingers of both hands, locate and palpate the **mandible**, or jaw bone. The **angle** is at the posterior, lower corner of the jawbone. The **ramus** is the flat, vertical portion of the mandible just above the angle.	Figures 11-5, 11-8
	Hyoid Bone, Anterior Neck Landmark ▸ hyoid bone ▸ thyroid cartilage	Place your thumb and first finger on either side of the anterior neck, just underneath the mandible (jawbone). Jut your chin slightly forward. You should feel the **hyoid** bone as the solid, movable structure at the very top of the neck, above the Adam's apple (remember that this is the **thyroid cartilage**). Press lightly on either side of the hyoid bone to get a firm grasp, and *gently* move it laterally with your thumb and fingers. Swallow, and notice how the bone moves up and then back down again.	Figures 11-9, 11-16

Practical Checklist—Head, Face and Neck (continued)			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
	Cervical Vertebrae ▸ spinous processes ▸ 7th cervical	You'll need a "client" for these steps. Have your client lie face down, with a pillow or other support under the head and neck. Carefully explore the base of the head at the neck. Just below, you should be able to feel the **spinous process** of the C2 vertebra. Palpate carefully along the cervical vertebrae and count down to C7, the **7th cervical** vertebra at the base of the neck.	Figures 11-10, 11-11, 11-15
	Joints ▸ TMJ (temporomandibular joint)	Place your fingertips at the joint of your mandible (jawbone)—the **TMJ**. Slowly open and close your mouth as you carefully palpate this area. With your mouth relaxed and open, and your fingers on the TMJ at each side, carefully move your jaw laterally back and forth and notice how the joint adjusts with the movement.	Figure 11-9
	Frontal/Maxilla/Zygomatic Landmarks ▸ orbit (eye socket)	With the tips of your fingers, carefully palpate around the bones that encircle your eyes to create the **orbit**. See if you can identify where the **frontal**, **maxilla**, and **zygomatic** bones come together as you move around this opening.	Figures 11-5, 11-7
	Face Muscles ▸ frontalis ▸ temporalis ▸ masseter (chewer)	Place the fingertips of both hands flat across the front of your forehead. Then "wrinkle your brow" by tightening and relaxing the **frontalis** muscle over your forehead. As you do this, gently move your fingers around the region to see whether you can identify where the muscle originates and inserts. Do you notice how it works as you lift your eyebrows? Now place your fingertips over the regions of the temporal bones. As you close your jaw, you should feel the contractions of the **temporalis** muscles in the temple region above the ears. Finally, place your fingertips on each cheek, just below the cheekbone, in the "soft" region between the cheekbone and the jaw. Now pretend you're chewing some food or gum (or actually eat a bite of food or chew a piece of gum, if you want). You should feel the contraction of the **masseter** muscle as you chew.	Figures 11-18, 11-19, 11-20
	Neck and Head Muscles ▸ SCM (sternocleidomastoid) ▸ trapezius	With your client lying face up, stand at his head. Have the client raise head slightly and turn head laterally so you can see the **SCM** muscle protruding. Support the client's head and palpate along the borders of the muscle, following it from behind the ear lobe down to the clavicle and sternum. With your client lying face down, stand above the client's head. Gently take hold of the band of muscle fibers that lie across the client's shoulders in this position. These are the fibers of the **upper trapezius** (**upper traps**). Follow these fibers upward toward the base of the head at the occiput, and downward to where they insert in the lateral clavicle. Have the client elevate the scapula toward the ear, and see whether this muscle becomes tight.	Figures 11-23, 11-24

Step 16 Lesson Summary

- ❑ We hope that learning all these details about the head, face and neck has stretched you just enough for a good mental workout and increased the strength of your massage therapy foundation to just the right level for now. (Maybe you're even ready to join the flamingos in a well-deserved rest!) The bones, joints, landmarks and muscles of this region of the body are now part of your fundamental repertoire of skills. And, when you have the opportunity to apply this knowledge, you'll be amazed at how much you've learned about human anatomy, movement and the fundamentals of therapeutic massage.

Step 17 Mail-in Quiz 11

- ❑ Follow the steps to complete the quiz.

  a. Be sure you've mastered the instruction and the Practice Exercises that this quiz covers.

  b. Mark your answers on your quiz. Remember to check your answers with the lesson content.

  c. When you've finished, transfer your answers to the Scanner Answer Sheet included. Use only blue or black ink on your Scanner Answer Sheet.

  d. **Important!** Please fill in all information requested on your Scanner Answer Sheet or when submitting your quiz online.

  e. Submit your answers to the school via mail, e-mail, fax or, to receive your grade immediately, submit your answers online at www.uscareerinstitute.edu.

Mail-in Quiz 11

Select the single best answer to complete each sentence.

1. **The foramen magnum is located in the _____ bone.**
   a. parietal
   b. hyoid
   c. frontal
   d. occipital

2. **The _____ bones create much of the top and sides of the skull.**
   a. parietal
   b. temporal
   c. zygomatic
   d. frontal

3. The _____ is the broad, shallow depression above and around the ear that is nearly filled by muscle.

a. mandibular fossa
b. occipital fossa
c. temporal fossa
d. zygomatic arch

4. The _____ is the large, superficial bump directly behind the earlobe.

a. styloid process
b. mastoid process
c. zygomatic arch
d. temporal fossa

5. The two small bones at the bridge of the nose are called the _____ bones.

a. zygomatic
b. temporal
c. ocular
d. nasal

6. The head, face, and neck regions are particularly sensitive and responsive to massage therapy because _____.

a. these areas are so often injured
b. these areas have so many muscles and nerve endings covering a relatively small area
c. people so often judge us by how we look
d. these areas are less likely to receive proper care and attention otherwise

7. The _____ bone houses the upper row of teeth.

a. mandible
b. maxillary
c. zygomatic
d. cheek

8. Formed by the coming-together of several facial bones, the _____ is commonly called the eye socket.

a. circle
b. rotator
c. orbit
d. zygomatic arch

9. The _____ and _____ bones contain sinuses.

a. frontal, maxillary
b. zygomatic, nasal
c. frontal, nasal
d. maxillary, temporal

10. The flat, vertical portion in the posterior region of the jawbone is called the _____.

a. condyle
b. angle
c. ramus
d. coronoid process

11. TMJ stands for _____

a. temporomandibular joint
b. the masseter joint
c. the mandible joint
d. temporomasseter joint

12. The TMJ is classified as a _____ joint.

a. plane
b. modified hinge
c. ball and socket
d. condyloid

13. There are _____ cervical vertebrae.

a. 7
b. 5
c. 9
d. 12

14. The vertebra that articulates with the occiput is _____.

a. C3
b. C1
c. C2
d. C7

15. The central, large opening in each vertebra through which the main spinal cord passes is called the _____.

a. intervertebral foramen
b. transverse foramen
c. vertebral foramen
d. foramen magnum

16. The joint portion of the vertebrae is called a _____.

a. transverse process
b. spinous process
c. body
d. facet

17. What really happens when someone experiences a slipped disc is that the disc has _____.

a. developed a crack
b. torn away from its foundation
c. become dry and brittle
d. rotated 900

18. Another name for the atlantoaxial joint between the first and second cervical vertebrae is the _____ joint.

a. atlas
b. axis
c. dens
d. orbit

19. The large bump you feel at the base of your neck just above the thoracic vertebrae is the spinous process of _____.

a. C7
b. C5
c. C9
d. T1

20. The _____ cartilage is also known as the Adam's apple.

a. hyoid
b. thyroid
c. parathyroid
d. trachea

21. The _____ is the horseshoe-shaped bone in the neck that attaches to the tongue.

a. thyroid
b. hyoid
c. zygomatic
d. maxilla

22. The _____ muscle originates in the aponeurosis of the head and inserts in the skin of the eyebrows and the root of the nose.

a. masseter
b. frontalis
c. temporalis
d. zygomatic

23. The two _____ muscles can exert a combined force powerful enough to produce 150 pounds of pressure.

a. splenius capitus
b. maxilla
c. masseter
d. temporalis

24. The _____ muscles are involved in flexion and rotation of the neck and in lifting the ribs.

a. upper traps
b. levator scapula
c. splenius capitus
d. scalene

25. From its name, you know that the SCM muscle has attachments to the _____.

a. shoulder, the chest, and the masseter
b. sternum, the clavicle, and the mastoid process
c. sternum, the clavicle, and the masseter
d. shoulder, the clavicle, and the mouth

Congratulations

You have completed Lesson 11,

Movement and Support III—
The Head and Neck

Do not wait to receive the results of your quiz before you move on.

Lesson 12
Swedish Massage II—Procedures

Step 1 Learning Objectives

- ❑ After completing this lesson, you will be trained to do the following:
  - Understand and apply the concept of "general to specific and back again" in professional massage.
  - Develop and practice a Swedish massage procedure for the face, scalp, head and neck.
  - Develop and practice a Swedish massage procedure for the upper limbs.
  - Develop and practice a Swedish massage procedure for the chest and abdomen.
  - Develop and practice a Swedish massage procedure for the lower limbs and feet.
  - Develop and practice a Swedish massage procedure for the back.
  - Understand the importance of and perform appropriate "finishing techniques" to a client.
  - Understand the techniques for and practice chair massage.
  - Use the Practical Checklist to develop a variety of Swedish massage procedures in a full-body massage on a client.

Step 2 Lesson Preview

- ❑ So far in your *Massage Therapy* course, you've learned a lot of new information—information about the human body, about gaining a client's trust, about specific techniques for encouraging relaxation in the human body and about the way professional massage therapists behave. You've even used volunteer "clients" to help you learn about the body.

This lesson continues your education in Swedish massage.

It's time to take these separate pieces of information and begin to integrate them, so you can develop a foundation as you practice and gain experience working on real bodies.

To be a good massage therapist, it's important to know how to perform massage strokes. And it's important to know how to combine various kinds of specific strokes on various parts of a client's body into an integrated whole, one that benefits your client's health.

In this lesson, you'll begin to integrate your new skills and knowledge.

Step 3 More Than Body

- ❑ Read the following paragraph and guess where it takes place.

You go into an office. You're there because you want to feel better. Someone shows you into a room with a table in it and hands you a wrap to put on. You undress, feeling somewhat nervous and vulnerable (not to mention chilly), try to cover yourself with the wrap, and sit on the table, waiting. The person you want to see comes in, looks you up and down, and asks you some questions. "Oh," she says, "I forgot something." She leaves the room and you wait, nervous, until she returns with a piece of equipment. She picks up her clipboard and jots down some information. "Now," she says, "let's get started."

A visit to the doctor.

Where are you? Because this is a course in massage therapy, you might guess that you're in a massage therapist's office—maybe a very impersonal massage therapist's office. However, the previous paragraph could describe a visit to the doctor. And when was the last time you thought, "Oh boy! I get to go to the doctor today!?"

Good massage therapists, as do good doctors, treat the human body as more than just a collection of flesh and bones. So before you begin practicing full-body Swedish massages, it's vital that you keep a few things in mind.

It's All About Connection

Part of the healing that comes from massage is the simple contact with another human being. Still, a disembodied pair of hands rubbing on your skin would not be a massage.

When you welcome your client, look her in the eye. As you conduct your pre-massage interview and discuss contraindications, look at her in a friendly way. During the massage, maintain eye contact at a level that's comfortable for both of you. You don't want your client to feel that you're staring at her because that may make her feel uncomfortable. But you do want your client to feel that you really see her, too.

Eye contact and hands-on contact are two ways to stay connected to your client during a massage session.

While you're giving a massage, you can maintain your connection with your client through touch. Remember, your client will probably be face down for about half of the massage, and even when she's face up, it might be inconvenient for her to look at you.

Staying connected is simple, as long as you're prepared and attentive—and have your supplies within reach. As you move around the end of the table, lightly rest your hand on your client's feet or head. If you need a drink of water, place your other hand on the small of her back while you take a sip. When you move from one area to the next, give the area you're leaving a gentle, parting squeeze. When you approach another body segment to massage, don't make any sudden grabs.

Think of it this way: Have you ever been sitting in a darkened movie theater, fully absorbed in a scary movie, and had a friend suddenly grab you? Maybe you laughed, but you certainly weren't relaxed. You don't want your massage sessions to seem scary!

It's as Easy—and as Complex—as 1, 2, 3 ...

Avoiding unexpected touch is one of the best ways to keep your massage clients relaxed and to ensure that they have a positive therapeutic experience. Therefore, it's good to conduct the massage in a way that the client understands and can anticipate.

The order in which a massage progresses—the design or pattern of a massage—is called the **sequence**. A good sequence organizes a massage so that you move smoothly from one stroke to the next on a particular body part, and then proceed smoothly to the next body part.

A good sequence reassures you and your client but also lets you be flexible and creative.

The DVD that accompanies this lesson, *Massage Therapy: Swedish Procedures*, shows one possibility for a full-body massage sequence. In this lesson, we also provide detailed instructions for basic sequences you can learn and apply on each body area; these sequences will help you provide a balanced therapeutic session to the client.

As important as the massage sequence is, however, it's helpful to think of a sequence not as a rigid rule, but instead as a framework on which you build. You need the freedom, and you have the responsibility, to respond to what is going on in your client's body so that you can serve the client's needs. For example, maybe you find extra tension in a client's trapezius muscles, so you spend extra time there; you might also discover that the client's hands are fairly relaxed, so you don't need to linger.

Be sure to explain to your clients how much work is and isn't possible in one, one-hour session. It's simply not possible to do extra work in several specific areas as part of a one-hour, full-body massage. Someone wanting intense work on his lower back may need a longer session, or a session devoted just to that area.

Although your clients are all human beings, they aren't gingerbread people cut from dough with cookie cutters. Each client will bring different issues to the table (literally). Also, every massage therapist is different. You have unique experiences and gifts to bring to your new profession. The sequence of a massage is one area in which you can express your unique style.

Out with the Bad Air, In with the Good

Reminding your client to breathe deeply will help her relax.

Everybody knows how to breathe, right? Well, yes and no. Some kinds of breathing are more relaxing than others. Next time you're nervous, notice your breathing—it's probably rapid and shallow. Taking deep breaths can actually help you relax.

Your client may also be slightly nervous before or during a massage. Your touch on her body may be bringing emotional issues to the surface; she may not be able to mentally shake off the problems of her day and be in the present. As you go through a massage, you can help your client relax more fully by reminding her to breathe deeply and slowly.

Occasionally a client needs instruction in deep breathing, sometimes called **belly breathing**. Tell her to inhale through her nose deeply and slowly so that her abdomen expands first, and then her chest expands.

Have her hold her breath for three counts, and then ask that she allow the breath to flow out slowly (she doesn't have to push it out). You might use the same slow count of three for inhaling, holding, and exhaling. Repeat this a few times. Synchronize your breathing with hers to increase the strength of your connection.

If the client has trouble with this breathing technique, have her lay her hand gently on her abdomen and push her hand up by breathing in. This action may allow her diaphragm to expand and reassure her that her lungs will also fill.

General to Specific and Back Again

Have you ever noticed that relationships have patterns? Let's say you're walking down the street and see a friend. First, you might shake his hand or give him a quick hug. You may then chat for a moment—maybe about the weather—before you bring up a more serious topic, such as expressing concern for an ongoing health problem. As you get ready to separate again, you will probably say something light—perhaps "If you need me to run your kids' carpool, give me a call." Your encounter may finish with another handshake or hug.

The pattern in the encounter above is *general to specific and back again.* You could also think of it as *surface to deep and back out.* You start with a ceremonial greeting of hug or handshake, continue with a conversation at the surface level, move to in-depth topics, and back out again, ending with the same ceremonial handshake or hug that you began with.

In dealing with a massage client, you duplicate this pattern in two ways: in the relationship as a whole and in your work on the client's body.

When a client comes into your office, you will probably ask how he is. He may say he's tired. That's a pretty general statement! Your job is to ask questions to elicit specific information. Perhaps he's not sleeping well because his shoulders are sore. Now you address his problem directly, through the massage, and you have enough information to pay attention to his specific problem. After the massage, you ask a more general question: "How are you doing now?" You may chat a bit more before he leaves.

Similarly, as you do hands-on work on a client's body, you move from general strokes to specific work:

1. First, use strokes that relax an entire area and increase circulation. Your touch helps the client relax and trust you.
2. Second, use strokes that relieve congestion and tightness in specific parts of the area you're working. The client's trust, developed in the first step, lets you work more deeply into the tissues.
3. Third, complete the work with general, superficial strokes to soothe the area, allow any tensions released to dissipate, and enhance the client's relaxation.

You'll see this pattern in practice in this lesson as we move through each area of the body.

Practicalities

Although positive mental and emotional habits and practices are vital parts of becoming a good massage therapist, sometimes simply having your physical space organized is a great help, too.

The checklist below summarizes practical things you can do to make a massage session run smoothly and professionally.

Completed (✔)	Before the client arrives, make sure that:
_____	Oil and lotion bottles are filled.
_____	Sheets and other draping materials are fresh and clean for this client.
_____	Bolsters, stools and other accessories are clean and within easy reach of the table.
_____	Your client intake form is ready for the client to fill out.
Completed (✔)	**After the client arrives:**
_____	Have the client fill out the intake form and discuss the client's needs and expectations. Remember, as a student, you must not give massage to anyone but healthy, uninjured adults who are not pregnant.
_____	Explain the dressing procedures to your clients and ensure that he has all of the wraps or drapes necessary.
_____	Wash your hands.

Spending a few moments at the beginning of the day and before each client to take care of logistical details—filling your lotion bottles, for example—frees your mind and spirit to focus on the client during the session.

Step 4 Face and Scalp Massage

- ❑ Jennifer cuts and styles hair in a multi-service salon. She and her colleagues may offer a wide variety of services, but all agree on one thing: Their clients love the mini-massages that are part of each service. For example, hair stylists often perform massaging movements while shampooing clients. Also, estheticians or cosmetologists are licensed to provide facials that treat skin conditions; as part of their services, they may offer some massage treatments.

  As a massage therapist, you may also perform massages on the face and scalp as part of a total-body treatment. However, you should be sure to ask clients in the initial consultation if they want the face and scalp massaged. Sometimes clients prefer that you not disturb their makeup or hairstyle; clients may also have allergies or skin conditions that would preclude face and scalp massage.

Techniques for Face and Scalp Massage

Let's take a moment to go over Swedish techniques for the face and scalp:

- **Scalp massage**—Because the head will normally be covered with hair, the scalp is an area that doesn't lend itself to effleurage. If you were to try effleuraging your client's scalp, you'd end up tangling hair, unless your client was completely bald! Circular friction techniques work well on the scalp, but you'll need to use small circles, with the fingers planted firmly. You can also rub in short straight lines, or in a criss-cross pattern, always being careful of the hair.

- **Effleurage or petrissage**—When you're effleuraging or petrissaging the face, use the pads of your fingers and thumbs.

When you're effleuraging or petrissaging the face, use the pads of your fingers and thumbs.

- **Tapotement**—As you might suspect, the form of tapotement used on the face consists of tapping your fingers against the skin. Because this form of massage is very stimulating, always work with very light pressure and tap with only your fingers.

When using tapotement on the face, lightly tap your fingers against the skin.

- **Vibration**—While pressing your fingertips at a particular point on the skin, rapidly contract your arm muscles; your client will feel a vibration. Because this technique is very stimulating, limit shaking to a few seconds at any particular spot.

Vibrate a particular spot on your client's face for only a few seconds.

Now let's apply these techniques in a face and scalp massage.

Procedures for Face and Scalp Massage

If you're performing a full-body massage, you might not choose to perform as detailed a sequence as this on the scalp and face. However, we give you these sequences in case you are providing a face-only or face-and-scalp-only massage.

You can start with either the scalp or the face. Because you don't need a lubricant in scalp massage, you (or your client) may prefer to start with the scalp so that you don't have to wash lotion off your hands before beginning.

Scalp Massage

You can massage the scalp with the client sitting in a chair with her head at a comfortable height, or with the client lying on the table. We'll assume the client is lying on her back, with you sitting behind her head.

1. Use the pads of your fingers to provide circular friction in rows up the back of the scalp. Lift your hands each time you begin a new row. Repeat up to five times.

Use the pads of your fingers to provide circular friction in rows up the back of the scalp.

2. Use your fingertips to provide circular friction from the forehead all across the top of the head to the back of the head. Repeat up to five times.

Use your fingertips to provide circular friction from the forehead all across the top of the head to the back of the head.

3. Place your fingertips in front of the client's ears at the hairline. Move your fingers behind the ears, rubbing lightly.

Place your fingertips in front of the client's ears at the hairline. Move your fingers behind the ears, rubbing lightly.

Face Massage

Clients usually have enough natural oils on the skin of their faces to make application of oil or lotion unnecessary. Also, many people have an aversion to the feeling of oil or lotion on their faces. If your client's skin is very dry, ask her if she would like a *little* bit of lotion or oil.

In general, when working the face, think of working from the center of the face to the periphery. For a moment, try moving one of your fingers from the center of your own forehead outward to the temple. Now, try moving in the opposite direction. For most people, the first way (from the center outward) is much more relaxing than the other direction.

A suggested sequence for a face massage follows, with the client lying on her back and with you seated behind her head:

1. Move your thumbs from the center of the client's forehead out to the temples in a series of lines from just above the eyebrows to the hairline.

Move your thumbs from the center of the client's forehead out to the temples in a series of lines from just above the eyebrows to the hairline.

2. Gently place your fingers on the client's chin and slide your hands back to her ears. Repeat several times.

Gently place your fingers on the client's chin and slide your hands back to her ears. Repeat several times.

3. Place your thumbs at the sides of your client's nose, near the bridge. Move your thumbs down the side of the nose and around the corners of the mouth. Slide your fingers up the jawline to the client's ears.

Place your thumbs at the sides of your client's nose, near the bridge. Move your thumbs down the side of the nose and around the corners of the mouth. Slide your fingers up the jawline to the client's ears.

4. With your left hand, hold the client's right eyebrow steady and gently move the fingers of your right hand over the client's right eyelid to the cheek. Perform the same slight, gentle stroke to the client's left eyelid.

With your left hand, hold the client's right eyebrow steady and gently move the fingers of your right hand over the client's right eyelid to the cheek. Perform the same slight, gentle stroke to the client's left eyelid.

5. Perform steps 2 through 4 again.

6. Place your fingertips on each temple and rotate gently before stroking back toward the hairline.

Place your fingertips on each temple and rotate gently before stroking back toward the hairline.

7. Beginning with your fingertips at the bridge of the nose, use small, circular strokes across the eyebrow line to the temples. Work in rows back to the hairline.

Beginning with your fingertips at the bridge of the nose, use small, circular strokes across the eyebrow line to the temples. Work in rows back to the hairline.

8. Place your index fingers underneath the center of the client's lower lip, stroke down and slightly back, and then stroke in very small circles to the temples.

Place you index fingers underneath the center of the client's lower lip, stroke down and slightly back, and then stroke in very small circles to the temples.

9. Starting again at the corners of your client's mouth, use small circles on the cheeks.

Starting again at the corners of your client's mouth, use small circles on the cheeks.

10. Starting with your index fingers at the center of the upper lip and your middle fingers under her lower lip, glide gently out (as if you're pulling the client's face into a smile).

Starting with your index fingers at the center of the upper lip and your middle fingers under her lower lip, glide gently out (as if you're pulling the client's face into a smile).

11. If desired, you can perform tapping or vibration at specific points. For example, using just your fingertips and a gentle touch, perform tapping movements across the forehead, from nose to temple, from mouth to ear, and from chin along jawline to earlobe.

Using just your fingertips and a gentle touch, perform tapping movements across the forehead, from nose to temple, from mouth to ear, and from chin along jawline to earlobe.

12. Massage the earlobes with a gentle, kneading motion.

Step 5 Neck

- When babies are born, they have no control over their neck muscles. When you hold a newborn, you have to be sure to keep a hand under the baby's head to provide that support. Although your massage clients have presumably developed some muscular control, you hope they are going to be so relaxed on your table that they require support.

  Again, we'll assume the client is lying on her back with you seated behind her head. To massage the head and neck, follow this sequence:

  1. First, apply lotion using effleurage strokes. Start with your hands at the outside of the shoulders, and use your palms to glide up the neck. Repeat this stroke several times to massage the whole area well.

Start with your hands at the outside of the shoulders, and use your palms to glide up the neck.

2. Supporting the client's head with your hand, turn the head to one side. Starting just below the mastoid process, perform gliding strokes down the neck, across the shoulder and deltoid, and back up the neck to the starting point. Repeat stroke up to five times.

Supporting the client's head with your hand, turn the head to one side. Starting just below the mastoid process, perform gliding strokes down the neck, across the shoulder and deltoid, and back up the neck to the starting point.

3. Petrissage that side of the neck, gently lifting the neck muscles and squeezing them.

4. Now turn the client's head to the opposite side and repeat steps 2 and 3.

5. Supporting the client's head, gently hook your fingertips under the occiput and very gently apply **traction** (mild stretching).

6. To finish, perform the effleurage strokes from step 1.

Step 6 Upper Limbs

- Unless your clients have had shoulder injuries or other injuries, they may not be aware of how much they rely on their hands and arms. Before you started this massage course, you might have taken your hands and arms for granted, too. But these work hard! Your hands and arms dress you, they lift food to your mouth, they drive your car—if you speak sign language, they even serve as one of your primary ways to communicate!

  In a massage, arms and hands deserve a lot of careful attention. The sequence below is one possible way to apply Swedish techniques to the arms and hands. The separate sequences describe massaging the arm and massaging the hand. You perform both sequences to one limb before moving to the client's other limb.

  The arm and hand sequences are performed with the client sitting in a chair or lying face up on the table. The following sequences are described as if the client were lying face up.

Arm Massage Procedure

1. Undrape one arm and apply lotion from shoulder to wrist and back, using effleurage strokes.
2. Holding the client's wrist with your inside hand, use your outside hand to apply effleurage strokes with your palm. Move up the outside of the arm to the shoulder and back down to the wrist. Apply more pressure while moving up the arm and less while coming back to the wrist. Repeat up to five times, covering as much skin as possible.

Apply effleurage strokes with your palm.

3. Now turn your attention to petrissage. On the arm, you'll knead the biceps and triceps alternately; on the forearm, the wrist extensors and flexors. Using both hands (thumbs pointing toward the shoulder), direct your individual kneading movements toward the shoulder, working your way up the client's arm from the hand.

Petrissage the wrist flexors of the forearm.

Petrissage the biceps and triceps.

4. Lift the client's hand to bend the elbow. Supporting the wrist with one hand, stroke the forearm muscles more deeply with the fingers of the other hand, going from wrist to elbow.

Stroke the forearm muscles more deeply.

5. Repeat step 2. Then massage the client's hand (described in the next section) before massaging the client's other arm.

Hand Massage Procedure

1. The hand is too small for you to perform long gliding movements, but do establish contact with the entire hand, using light strokes. The lotion on your hands from the arm massage may be enough to work the hand.
2. Petrissage the palm of the hand. It works well to rest the client's elbow on the table and work the palm with your thumbs. Making circular movements from the heel of the hand (just above the wrist) toward the thumb and little fingers relaxes the hand.
3. Turn the client's hand toward you. Rub the back of the hand and wrist. Circular rubbing from the client's fingers toward the wrist also relaxes the hand.

Petrissage the palm of the hand.

4. Massage each finger, working from the base to the tip with a squeezing action.

Rub the back of the hand and wrist.

Before moving on to the torso, lower limb, and feet, take a few moments to check your progress. Perhaps after you complete the Practice Exercise, you might watch the Massage Therapy DVD *Swedish Procedures*. Seeing the massage sequences in action will help you understand how they are performed.

✍ Step 7 Practice Exercise 12-1

❑ Select the best answer to complete each sentence. Check your answers by looking them up in the lesson.

1. **While you're giving a massage, you can maintain your connection with your client through _____.**
   a. staring fixedly at her
   b. touch
   c. continuously talking in a quiet voice
   d. asking her to "loosen up"

2. **The order in which a massage progresses—the design or pattern of a massage—is called the _____.**
   a. effleurage process
   b. design process
   c. technique
   d. sequence

3. **Deep breathing, or belly breathing, involves slowly inhaling through the nose and _____.**
   a. exhaling very quickly
   b. exhaling in three short bursts
   c. expanding the abdomen first and then the chest
   d. expanding the chest first and then the abdomen

4. **For massage, the concept of going from *general to specific and back again* means to go from _____.**
   a. surface to deep and back out
   b. general to sur face and deep
   c. deep to surface and back out
   d. deep to general and back out

5. **Before the client arrives, you should _____.**
   a. fill oil and lotion bottles
   b. clean bolsters
   c. have the client intake form ready
   d. all of the above

6. **One chair massage session normally lasts about _____ minutes.**
   a. 5
   b. 15
   c. 60
   d. 90

7. **Before the massage, you should ask if the client _____.**
   a. wants her scalp and face massaged
   b. can pay for the massage
   c. wants effleurage or petrissage techniques
   d. all of the above

8. **When performing a massage on the scalp, you use _____.**
   a. extensive, deep effleurage strokes
   b. circular friction techniques using the pads of your fingers to make small circles
   c. lots of intense tapping and shaking movements to tighten the skin
   d. oil-based lotion

9. **When performing a face massage, you should work from the _____.**
   a. temple inward to the forehead
   b. sides of the face inward to the nose
   c. center of the face outward to the periphery
   d. temple downward to the chin

10. **A neck massage requires you to _____.**
   a. support the client's head during some steps of the sequence
   b. support the client's head throughout the entire sequence
   c. only support the client's head if she has a stiff neck
   d. never support the client's head

Step 8 Review Practice Exercise 12-1

- ❑ Compare your answers to Practice Exercise 12-1 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 9 Chest and Abdomen

- ❑ Massaging a client's chest and abdomen requires some carefulness on your part, because those parts of the body are surprisingly sensitive.

  Sometimes your clients won't want you to massage their chest or abdomen. If your clients (particularly women) are concerned about modesty, you can reassure them that draping will keep their breasts and genital area covered. Even if a client is open to receiving massage, remember that massage to the chest and abdomen can stir up feelings of vulnerability.

  Below is one sample sequence for applying Swedish techniques to the chest and abdomen. We assume that your client is a woman and her breasts will be draped, but we also give instructions for male clients. Remember that massage to the abdomen should encourage the natural flow in the large intestine, and your abdominal strokes will usually move in the direction of that flow (lower right upward, across middle, down left).

  Of course, the client is lying face up on the table for this sequence.

1. Standing to the client's right, use effleurage strokes to apply lotion to the abdomen, chest, and sides of the body. Then use more effleurage strokes on the abdomen and chest, starting with your palms at or below the navel, as low as the draping will allow. If you're massaging a man, extend the strokes over the shoulders; turn your wrists to glide over the sides of the ribs and back to the iliac crest. Repeat two or three times.

Use effleurage strokes to apply lotion to the abdomen.

2. Make clockwise, gliding circles on the abdomen with your right hand. With your left hand, glide in a half-circle from the right side of the client's abdomen (to your left) up the client's side to the ribcage, across the abdomen just under the ribcage, then down the client's left side to the hipbone. Repeat two or three times.

Make clockwise, gliding circles on the abdomen.

3. Shifting your attention to your client's sides, use your hands alternately with firm strokes that pick up the flesh between the ribs and the hip and back to the ribs, pulling your hands toward you. Repeat on the other side of the body.

Use your hands alternately with firm strokes.

4. If your client is male, stand behind his head for the final strokes. Begin at the clavicle, and with your hands flat, extend a gliding stroke over the entire chest and down to the hipbone. Continue the stroke by separating your hands and returning up your client's sides, through the armpit area, and up the sides of the neck. Repeat three times. (This stroke doesn't work on females, because of the breast drape.)

Step 10 Front of Lower Limbs

- ❑ Although you should practice good body mechanics throughout a massage, it's particularly important to pay attention to your stance and posture while you're massaging the lower limbs. These muscles are the longest in the body, and you need to cover a great deal of surface area. Reaching with your arms and shoulders to stroke, instead of shifting your body weight from side to side (or front to back), will strain your arms, neck, and lower back. So be sure you are using the archer and horse stances to your advantage!

  Following is one possible sequence for applying Swedish massage techniques to the fronts of the legs.

1. Using effleurage strokes, apply lotion to the leg and thigh. Start at the ankle, with one hand on the inside of the leg and one on the outside. Your outside hand should be slightly ahead of your inside one. When you reach the top of the thigh, return to the ankle. Apply more pressure while moving toward the heart, and reduce pressure while returning to the ankle. Repeat up to five times. You can apply more pressure with each stroke.

Using effleurage strokes, apply lotion to the leg and thigh.

2. Use petrissage strokes along the inside of the leg, beginning at the ankle, up the flesh beside the tibia, to the knee. Continue kneading movements up the client's thigh.

Use petrissage strokes along the inside of the leg, beginning at the ankle, up the flesh beside the tibia, to the knee.

3. You can also use wringing strokes and compression to the front of the thigh.

You can also use wringing strokes and compression to the front of the thigh.

4. Repeat gliding strokes from step 1 over whole limb. Repeat the procedure on the other limb.

Step 11 Feet

❑ A few women took a day off together and went to a spa. They had massages and then luxuriated in a natural hot spring pool. As they floated, the conversation turned to ideal marriage partners. Many qualities, such as trustworthiness, fidelity and emotional openness, were tossed out. But Peggy ended all discussion when she said dreamily, "You know what I really want? Someone who would massage my feet while we watch TV." Everyone agreed.

As these women knew, foot massage can be a delightful exchange.

Whenever you work on feet, be aware that some people are highly ticklish in this area. Check with your client to see if she wants her feet massaged or not.

Following is one sequence for foot massage described as the client lies on her back.

1. Apply a minimum amount of lotion to your hands, and use firm gliding strokes on the top, sides and bottom of the foot, working from toes up to a point above the ankle. Use enough pressure so that you don't tickle.

Use firm gliding strokes on the top, sides and bottom of the foot.

2. Pick the foot up off the table slightly and, supporting the ankle, rotate the foot gently. Petrissage the sole of the foot in a similar manner to the hand, moving from the ball of the foot to the heel. Use kneading and friction movements on the bottom of the foot.

Use kneading and friction movements on the bottom of the foot.

3. Massage the top of the foot, pressing your thumbs in between the foot bones gently. Massage the toes with a squeezing motion.

Massage the top of the foot, pressing your thumbs in between the foot bones gently.

4. Repeat effleurage strokes over the foot once or twice. Cover the lower limb. Repeat the procedure on the other foot.

Step 12 Turning the Client Over

- By this point in the massage, your client will be well on her way to relaxation—and now you expect her to actually move! It will be easier for her to stay in that quiet mental and physical state if you help her with drapes and logistics. Remember, your client isn't a chicken on a rotisserie.

  The steps in one sequence for helping your client turn over are listed below.

  1. First, allow the client to relax while you remove any bolsters you've used under the neck or under the knees. Make sure the face cradle is in place and covered with a fresh pillowcase or other drape.
  2. Now you start the turning over process, during which you want to give the client privacy. Remove the breast drape, if you haven't already, as demonstrated in Swedish Massage I (Lesson 9). Check to see that the top sheet smoothly covers your client from feet to neck.

Tent the covering.

3. Stand at the side of the table. Reach across the client to grasp the near and far corners of the covering on the corners of the table. Tent the covering enough to allow your client to move under it, but keep it taut enough that it will continue to cover her as she moves. Ask the client to turn away from you as she turns on the table. She will need to scoot up the table a little to put her face into the cradle. When the client has turned over, put the sheet down comfortably across her shoulders.
4. Adjust the face cradle to the client's preferences and offer bolsters. A bolster under the ankles protects the knees and can reduce lower back tension. A client with extensive lower back problems might prefer a flat pillow under the abdomen to protect that area.

Adjust the face cradle to the client's preferences.

A bolster under the ankles protects the knees and can reduce lower back tension.

Although you want to keep to a minimum the length of time this "break in the action" takes, taking a drink of water at this time is a good habit to get into. You, as well as your client, need to prepare for the work and healing ahead!

Step 13 Back of Lower Limbs and Hips

- ❑ Massaging the back of the lower limb is very similar to massaging the front. You should take the same precautions about using proper body positions to protect yourself from strain and excessive fatigue.

  The sequence below is just one possible sequence for applying Swedish procedures to the backs of the legs. Of course, your client is lying face down (or prone) for this sequence.

  1. Undrape the leg and apply lotion with light effleurage strokes, using more pressure while stroking toward the heart. Beginning just above the Achilles' tendon (which is just above the heel), place your outside hand slightly ahead of the hand working up the inside of the leg. With your inside hand, stop the gliding strokes before you get to the (draped) groin area; with the outside hand, continue up over the gluteal muscles before turning back and continuing down the side of the leg. Meanwhile, the inside hand also completes the return stroke. Repeat up to five times, applying more pressure with each cycle.

Apply lotion with light effleurage strokes.

2. Use petrissage strokes on the calf, hamstring, and gluteal muscles, moving slowly from just above the Achilles' tendon all the way over the gluteals to the iliac crest. Adapt your strokes to the contours of the tissue you're working with. Many people are quite sensitive in their calves and gluteal areas, so go easy.


Use petrissage strokes on the calf.

3. Repeat effleurage strokes from step 1.
4. You can also use compression (leaning into the muscles) or wringing movements. For large muscles, such as the gluteus maximus and hamstrings, the heel of the hand or the knuckles are useful tools for deeper pressure.

The knuckles are useful tools for applying deeper pressure on larger muscles.

5. Finish by repeating the effleurage strokes from step 1, easing off the pressure. Redrape the limb you've been massaging, and repeat the procedure on the client's other lower limb.

6. When you have massaged both lower limbs, you can finish this area with gentle rocking movements. With the legs and feet draped, gently place your hands on the client's heels and push alternately. After a few repetitions, move to your client's side, leaving one hand on the heel, and place the other on the client's thigh area. Gently rock, sometimes with both hands, sometimes alternating hands. Perform the same rocking movements on the client's other heel and thigh. These rocking movements help deepen the client's relaxation.

Step 14 Back and Backs of Upper Limbs

- To many people, the words *massage* and *back rub* are synonymous. Although it's possible to perform self-massage on many areas of the body, for the back, you need some help! Maybe some very limber people can reach around and relieve particularly tense areas on their own backs—but even limber people can't watch what they're doing when they're working out that knot just below the scapula.

  There are a multitude of ways to apply Swedish techniques to the muscles of the back. The sequence below is one option.

  1. Stand to one side of the client. Undrape the client's back, and apply lotion with effleurage strokes. With hands together, begin at the lower back, continue up the spine and end at the nape of the neck. Separate your hands over the shoulders and down the client's sides, including the backs of the upper arms, to the hips. Use equal pressure on both the pushing and the pulling movements of these strokes. Repeat at least five times.

Effleurage the back.

2. Use petrissage on the client's side opposite to where you're standing. Start at the lower back and knead upward to the shoulder area, then move toward the client's spine and return to the lower back area. Pick up the upper trapezius muscles to help ease shoulder tension.

Petrissage the lower back and knead upward to the shoulder area, then move toward the client's spine and return to the lower back.

3. Now use alternating strokes along the client's entire back, beginning at the neck and working down to the lower back.

Use alternating strokes along the client's entire back.

4. Standing on the client's other side, perform steps 2 and 3 to the opposite side of the body.

5. If the client's arm is at her side, lift it, gently bending her elbow, and place her hand in the small of the back. The idea is to give you more room to work on the back muscles around the scapula. Use your fingers or the heel of your hand to work just under the "wing" of the scapula with kneading movements. Although you are likely to find many problem areas here, be aware that too much deep work in a limited surface area can cause the muscles to rebel and tense even further—you might leave the client with more tension than she came in with. You can always return to this area after the next step or later in the back massage. Once you've completed work on this area, replace your client's arm at her side.

If the client's arm is at her side, lift it, gently bending her elbow and place her hand in the small of the back.

6. Although you have already worked on the client's arms, it's often convenient to perform quick work on triceps muscles with the client lying on her stomach. Be sure you have included this area of the body in your effleurage strokes or perform one or two more to re-warm the area. Use gentle kneading on the triceps muscle.
7. Repeat steps 5 and 6 to the client's other side.
8. Repeat effleurage strokes on the client's entire back.
9. Now that the back is thoroughly warmed up, you can apply any number of more intense strokes. You can apply wringing strokes up and down and across the back; circular rubbing strokes with your fingers along the muscles of the spine; and vibration also along the spine. You can "walk" up the client's back: place the heels of your hands on one side of the spine and gently lean part of your weight onto your hands (protecting your wrists), then "walk" up the client's back by alternately moving your hands upward. Be very careful when working near the kidneys and the lower ribs. With the sides of your hands or cupped hands, you can gently apply tapotement to the back muscles (avoiding the kidney area). Listen to your client's body.

"Walk" up the back.

10. Finish the work on the back with long, gliding strokes. Stand at your client's neck, fingers on either side of the spine, and work downward toward the lower back. Rotate your wrists outward over the lower back, and pull back up. On the return stroke, your fingers will be out toward the client's sides. Repeat several times. Redrape your client's back.

Finish the work on the back with long, gliding strokes.

Step 15 Finishing Touches

- Now you've worked your client's entire body, one piece at a time. Your client is relaxed, but her body may feel somewhat like an accumulation of pieces instead of an integrated whole. For this reason, it's helpful to perform a final action to help the client feel a sense of completion.

  To finish, be sure your client is fully draped and warm. Standing to one side, gently place one hand on your client's upper back and the other on her lower back. Take a deep breath and exhale slowly. You may also use a gentle rocking movement to help deepen the relaxation.

You may also use a gentle rocking movement to help deepen the relaxation.

After a massage, the client is more open to suggestion. At this time, if your client has agreed, you may choose to say a positive affirmation, such as "You are relaxed and calm," or "You will sleep well tonight." Gently remove your hands from your client's back and allow her to relax in silence for a moment. Then let her take her time getting up. Give her privacy to dress.

Although you have already gone over this information in the pre-massage consultation, remind the client that she might feel some lingering effects from the massage. These aftereffects can include feeling "spacey" and sleepy. The best way to counteract these effects is to drink plenty of water (and/or other fluids, such as juice or broth) to flush the body's system.

Just telling a client to "drink more water" may not be enough. Suggest that she drink a set amount—such as eight glasses or two quarts—of water each day, and more after the massage. Have a glass of water ready for your client after the massage; she can drink it while dressing and setting her next appointment. While you're at it, drink a glass yourself. You've certainly earned it at this point!

Have water ready for your client after the massage.

Step 16 Chair Massage

- A popular, portable massage method is **chair massage**, which means just what it sounds like—massage performed on a client who is sitting in a chair. The chair can be either a specially designed massage chair, complete with a face cradle and adjustable armrests, or it can be a simple, low-backed chair or a stool. Clients receiving chair massages remain clothed.

  When a massage therapist is hired to give massage at a particular place, it is called on-site massage. Professional massage therapists with portable massage chairs can work individually or in teams, going out to a company, school, store or special event to offer massages. Chair massage has been gaining popularity within corporations and at colleges and universities. It's a way to give positive perks to employees, teachers or students, who can receive a company-sponsored massage while on a break during the work day or receive a school-sponsored massage before final exams.

  Chair massage focuses on the upper body, especially the shoulders, upper back, forearms, and hands. Studies have shown that people who receive regular upper body massage reduce their incidence of carpal tunnel syndrome by up to 75 percent. Upper body massage also leads to better performance on tests and promotes good morale.

  One chair massage session normally lasts around fifteen minutes. Chair massage can also be a way to build your massage business—if you set up a massage chair in a local store (with permission from the store, of course), you can offer five or ten minute sessions as samples of your work, then hand out business cards.

  When you give massage to strangers in an on-site setting, it's still important to get at least an overview of your client's medical condition. Ask if the client is taking any medications or has any health problems or recent injuries. Also find out if the client has ever had whiplash or back problems. If the answer to any of the above is yes, you must not perform massage until you are certified or licensed to do so. Explain that you are not yet licensed or certified in massage therapy, and that you have been instructed by your school to work only upon healthy, uninjured adults who aren't pregnant, while you're learning. In any case, before you venture out into the world, practice chair massage on your practice clients—your friends and family.

Chair Massage Techniques

Because your client will be clothed, and is likely to be in the middle of a work day or school day, you will *not* be using lotion for on-site massage. In general, you will not be giving scalp or face massage either, because you don't want to mess up your client's hair or makeup.

Ideally, you'll have access to a sink for hand-washing. If not, you can purchase and bring antibacterial towelettes with which to wash your hands between clients.

Here's one way to perform a chair massage:

1. Begin by standing, facing your client's back. Lightly brush your palms across the shoulders and down the back a few times, over the client's clothes. This is dry effleurage— effleurage without oil or lotion. Brush the arms as well. These strokes will introduce the client to your touch and begin the relaxation process.
2. Moving to petrissage, pick up the muscles on the tops of the shoulders and knead them. Roll and squeeze this entire area, moving out to the shoulders and thoroughly massaging the deltoid area.
3. With your finger pads, use circular friction on both sides of the spine, working your way slowly down the spine to the waist and back up to the shoulders. Continue the friction into the nape of the neck. Repeat this sequence.
4. Gently position the client's arms behind his back, so that the backs of his hands rest lightly on his lower back. Grasp both the scapulas and slowly rotate them, first left and then right, staying in tune with your client to know how much pressure to use.
5. Place your left hand on the right scapula, and with your right thumb and fingers, petrissage the area along the scapular borders. Try to get under the scapula a little. Switch hands, and do the same with the left scapula. Take your time.
6. Reposition the client's arms to rest on the armrests or hang loosely at his sides. With your thumbs on the back, place your fingers on the muscles on the sides of the ribs and on the back. Petrissage the area, squeezing and kneading.
7. Brush down the back with firm finger pressure, from the shoulders to the waist several times.
8. Move to the client's left side. To massage the upper limb, begin by lightly brushing from shoulder to wrist several times. If the upper limb is resting on an armrest, you can knead the arm with both hands. If the upper limb is hanging at your client's side, pick it up. Hold the elbow section with one hand, and massage with the other, petrissaging the arm with the fingers and thumb.

9. Hold the forearm with both hands, fingers on the underside, thumbs on the top. Gradually petrissage the entire forearm with both hands, working your way down to the wrist, up to the elbow and back down. Turn the forearm over and repeat this procedure.
10. Petrissage and roll the wrist.
11. To massage the hand, follow the other Swedish procedures you've learned (or use the sequence described in Step 6 in this lesson). Hand massage can be done quite well without lotion.
12. Switch to the opposite limb, repeating steps 8 through 11.
13. Finish the massage with tapotement strokes over the back and shoulders.

✍ Step 17 Practice Exercise 12-2

❑ Using words from the following list, fill in the blanks in the sentences below. Not all terms will be used.

large intestine	drapes	lower limbs	heart
gluteus maximus	vibrate	kidneys	15
rocking movement	feet	hamstrings	60
small intestine	walk up		

1. **Massage to the abdomen should encourage the natural flow in the _____; abdominal strokes should move in three directions: lower right upward, across middle and down left.**
2. **It's especially important to pay attention to your stance and posture while you're massaging the _____, because these are the longest muscles in the body.**
3. **Whenever you work on _____, be aware that some people are highly ticklish in this area.**
4. **The turning over sequence described in this lesson helps clients stay relaxed while you help them with _____ and logistics.**
5. **While massaging the backs of the lower limbs, apply lotion with light effleurage strokes, using more pressure while stroking toward the _____.**

6. **For large muscles, such as the _____ and _____, the heel of the hand or the knuckles are useful tools for deeper pressure.**

7. **While performing massage to the back, be very careful when working near the _____ and the lower ribs.**

8. **After the back is thoroughly warmed up, you can _____ the client's spine by alternately moving the heels of your hands gently up the client's back.**

9. **As a finishing touch, you may use a gentle _____ to help deepen the relaxation.**

10. **One chair massage session normally lasts about _____ minutes.**

Step 18 Review Practice Exercise 12-2

- ❑ Compare your answers to Practice Exercise 12-2 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 19 Take a DVD Break

- ❑ If you haven't already, or even if you have, now is a good time to watch (or review) your *Swedish Procedures* DVD.

  If you have a practice client handy, you can practice each body part sequence after you see it on the DVD.

  Be sure to review your DVD and practice your new massage sequences many times throughout your course and beyond. When you are ready, go through the Practical Checklist to ensure that you understand and can complete each massage sequence effectively. And remember, mastering your massage skills is a process—it will not happen overnight. However, the more you practice, the smoother your massage techniques and procedures will become. And in the meantime, you'll have some very happy and relaxed practice clients!

Now is a good time to take a break and watch your *Swedish Procedures* DVD.

Step 20 Practical Checklist

❑ At first glance, the information in this lesson could easily seem overwhelming. As you read through it, you might picture yourself flipping through pages to direct your next move while your client gets cold and greasy on the table.

However, don't despair. As you know already, you learn different kinds of information in different ways. Reading through a procedure is different from doing it. Once you actually perform the steps of a massage, the steps will make more sense to your logical mind. More importantly, your own body will learn how to give a good massage and how to listen to what's going on with your client.

Take some time to review and practice each item in the Practical Checklist.

Completed (✔)	Before the Massage
_____	▸ Review draping procedures.
_____	▸ Perform final review of planned sequence.
_____	▸ Change drapes and other linens.
_____	▸ Fill bottles and arrange all accessories within arm's reach of table.
_____	▸ Welcome client with appropriate eye contact.
_____	▸ Conduct pre-massage interview. (You'll learn about this interview process later in the course.)
_____	▸ Instruct client how to slip between sheets in dressing procedures.
_____	▸ While client is undressing, mentally plan appropriate sequence based on intake information.
_____	▸ Drape client face up and offer bolsters as appropriate.
_____	▸ Remind client to breathe deeply.

Completed (✔)	Scalp
_____	▸ Circular friction in rows up back of scalp.
_____	▸ Circular friction from forehead across top of head to back of head.
_____	▸ From front of ears at hairline, move fingers behind ears and rub lightly.

Completed (✔)	Face
	▸ Move thumbs from center of forehead out to temples in lines from just above eyebrows to hairline.
	▸ Slide hands from chin back to ears. Repeat several times.
	▸ Move thumbs down sides of nose near bridge to corners of mouth. Slide fingers up jawline to ears.
	▸ Gently move fingers over eyelid to cheek. Repeat on other side.
	▸ Gliding strokes (with small amount of oil) from neck to ears and back along jawline to chin.
	▸ Gliding strokes over nose; gliding strokes up jawline to ears.
	▸ Rotate fingertips on each temple and stroke back toward hairline.
	▸ Small circular strokes from bridge of nose across eyebrow line to temples, in rows back to hairline.
	▸ Stroke down and back from lower lip to chin; small circles to temples.
	▸ Small circles from corners of mouth to cheeks.
	▸ Glide out from center of upper lip; glide from under lower lip in circle to chin.
	▸ Gentle kneading of earlobes.
Completed (✔)	**Neck**
	▸ Effleurage from outside shoulders up neck.
	▸ Turning head to side, gliding strokes from below mastoid process down neck, across shoulder and deltoid, back up neck to starting point.
	▸ Petrissage side of neck, lifting and squeezing neck muscles.
	▸ Turning head, repeat above steps.
	▸ Gently apply traction from under occiput.
	▸ Repeat effleurage strokes from beginning.
Completed (✔)	**Upper Limbs**
	▸ Effleurage from shoulder to wrist and back.
	▸ Effleurage up outside of arm to shoulder back down to wrist.
	▸ Petrissage biceps and triceps, wrist extensors and flexors, kneading toward shoulder up arm from hand.
	▸ Stroke forearm muscles more deeply from wrist to elbow.
	▸ Massage hand (next section) before massaging other arm.
Completed (✔)	**Hands**
	▸ Light strokes to entire hand.
	▸ Petrissage palm with thumbs in circular movements from heel toward thumb and little fingers.
	▸ Circular rubbing of back of hand and wrist.
	▸ From base to tip of each finger, massage with squeezing action.

Completed (✔)	Chest and Abdomen
	▸ Effleurage strokes to abdomen, chest and sides of body. ▸ For male clients: from navel, effleurage over shoulders, sides of ribs, back to iliac crest. ▸ Gliding circles on abdomen, from right side of abdomen to ribcage, across abdomen under ribcage, down other side to hipbone. ▸ Alternating hands, with firm strokes, pick up flesh between ribs and hip. ▸ For male clients: Gliding strokes from clavicle over chest down hipbone, returning to sides and up sides of neck.
Completed (✔)	**Front of Lower Limbs**
	▸ Effleurage from ankle to top of thigh and back again, applying more pressure with each stroke. ▸ Petrissage inside of leg from ankle up the tibia to knee, up thigh. Use wringing strokes and compression to front of thigh. ▸ Repeat gliding strokes from beginning over whole limb.
Completed (✔)	**Feet**
	▸ Firm gliding strokes on top, sides, and bottom of foot, from toes up to above ankle. ▸ Rotating foot gently, petrissage sole, moving from ball of foot to heel with kneading and friction movements. ▸ Massage the top of the foot, pressing thumbs in between the foot bones gently. ▸ Massage toes with squeezing motion. ▸ Repeat effleurage strokes and cover lower limb; repeat procedure on other foot.
Completed (✔)	**Turning the Client Over**
	▸ Remove bolsters and other supports; engage covered face cradle. ▸ Cover client completely with top sheet (remove breast drape). ▸ Reach to grasp both corners of sheet, tent the covering and ask client to turn away from you as she turns on the table. Put sheet down across client's shoulders. ▸ Adjust face cradle and offer bolster for under ankles or flat pillow under abdomen.
Completed (✔)	**Back of Lower Limbs and Hips**
	▸ Effleurage strokes from Achilles' tendon up to below draped groin area and return, with inside hand. With outside hand, over gluteal muscles and iliac crest and return down the side of the leg. ▸ Petrissage from Achilles' tendon over calf, hamstring and gluteal muscles to iliac crest. ▸ Also can use compression or wringing movements; use heel of hand or knuckles for large muscles. ▸ Repeat effleurage from beginning, easing off pressure. ▸ Repeat procedure on other lower limb. ▸ Rocking movements: Gently place hands on client's heels and push alternately. Leaving one hand on one heel, move to side and place other hand on thigh area and gently rock. Perform on other heel and thigh.

Completed (✔)	Back and Backs of Upper Limbs
	▸ Effleurage from lower back, up spine, to nape of neck, over shoulders and down sides, including backs of upper arms, to hips.
	▸ Petrissage from lower back, kneading upward to the shoulder area, toward spine, returning to lower back. Pick up upper trapezius.
	▸ Knead up side of spine and over back muscles, shoulders and neck.
	▸ Alternate strokes along back from neck to the lower back.
	▸ Repeat above steps to other side of body.
	▸ Gently place client's hand in small of back, massage back muscles around scapula.
	▸ Gently knead on triceps muscles.
	▸ Repeat above steps to other side of body.
	▸ Repeat effleurage on entire back.
	▸ Other wringing strokes on back; circular rubbing on muscles of spine; vibration at base of spine; tapotement to back muscles (avoiding the kidney area); gentle "walking" up spine (avoiding kidney area).
	▸ Long gliding strokes from neck to lower back and return. Redrape.
Completed (✔)	**Finishing**
	▸ With client fully draped and warm, perform deep breathing with one hand on client's upper back and the other on her lower back.
	▸ Gentle rocking movement and positive affirmations.
	▸ Client relaxes in silence, rests, dresses in private.
	▸ While client is dressing, ready water for client.
	▸ Discuss possible aftereffects and flushing with water.
Completed (✔)	**Chair Massage**
	▸ Dry effleurage across shoulders, down back and arms.
	▸ Knead, roll and squeeze muscles on tops of shoulders, shoulders and deltoid area.
	▸ Circular friction on both sides of the spine, down to waist, back up to shoulders, into nape of neck. Repeat.
	▸ With client's arms behind his back, rotate scapulas.
	▸ Petrissage area along scapular borders.
	▸ Reposition client's arms and petrissage muscles on sides of ribs and on back.
	▸ Brush down back with firm finger pressure.
	▸ Lightly brush upper limb from shoulder to wrist.
	▸ Knead arm with both hands or petrissage with fingers and thumb.
	▸ Petrissage forearm down to wrist, up to elbow and back down. Turn forearm over and repeat.
	▸ Petrissage and roll wrist.· Follow Swedish procedures (or Step 7 of this lesson) for hand massage.
	▸ Switch to opposite upper limb and repeat procedures.
	▸ Finish with tapotement over back and shoulders.

Step 21 Lesson Summary

- ❑ You've finally had the opportunity to do more than visualize how you might perform a full-body Swedish massage!

  While remembering such specifics as appropriate draping, remaining connected, breathing (and having your client breathe) appropriately and adequately preparing your work area, you've learned sequences to promote healing in a body from head to toe. Each suggested sequence, whether it's applied to the face or feet, moves from general to specific and back again, and from shallow to deep and back again. Effleurage strokes are followed by petrissage, friction, vibration, or tapotement. You then finish with more effleurage and rocking movements.

  Keep in mind that the suggested sequences can serve as a starting point. Your own experiences and your ability to listen to your clients' bodies will all help you become a creative professional massage therapist.

Step 22 Mail-in Quiz 12

- ❑ Follow the steps to complete the quiz.

  a. Be sure you've mastered the instruction and the Practice Exercises that this quiz covers.

  b. Mark your answers on your quiz. Remember to check your answers with the lesson content.

  c. When you've finished, transfer your answers to the Scanner Answer Sheet included. Use only blue or black ink on your Scanner Answer Sheet.

  d. **Important!** Please fill in all information requested on your Scanner Answer Sheet or when submitting your quiz online.

  e. Submit your answers to the school via mail, e-mail, fax or, to receive your grade immediately, submit your answers online at www.uscareerinstitute.edu.

Mail-in Quiz 12

Select the best single answer to complete each sentence.

1. **Before and during a massage, it's important to maintain a connection with the client through _____.**
   a. lots of conversation
   b. touch
   c. eye contact
   d. both b and c

2. **You can help your client relax by deep breathing, sometimes called _____: inhaling through the nose deeply and slowly, so that the _____ expands first.**
   a. belly breathing, abdomen
   b. belly breathing, chest
   c. chest breathing, chest
   d. diaphragm breathing, belly

3. **_____ refers to following surface interactions of massage with deeper interactions of massage and returning to surface interactions of massage.**
   a. Specific to general and back again
   b. General to specific and back again
   c. General to more general and returning
   d. Specific to more specific and returning

4. **Clients receiving chair massages _____.**
   a. will probably not have any lotion applied
   b. remain clothed
   c. can expect the massage to last about 15 minutes
   d. all of the above

5. **On-site massages are usually conducted as _____.**
   a. lower limb massages
   b. full-body massages
   c. chair massages
   d. part of a visit to the cosmetologist

6. Chair massage focuses on the _____.

a. upper body (shoulders, upper back, forearms and hands)
b. feet and hands
c. lower limbs and torso
d. entire body

7. When performing a scalp massage, you should not use _____.

a. circular friction (small circles)
b. rubbing in short straight lines
c. rubbing in criss-cross patterns
d. effleurage

8. Clients usually have enough natural oils on the skin of their faces to make application of oil or lotion _____.

a. absolutely required
b. necessary, but only for teenagers
c. preferable
d. unnecessary

9. In general, face massage should be performed _____.

a. with ample quantities of oil or lotion
b. from the center of the face to the periphery
c. with sharp tapotement on and around the eyelids
d. from the temples downward to the chin

10. Upper limb massage involves separate sequences for the arm and for the hand; you should _____.

a. perform both sequences to one limb before moving to the client's other limb
b. perform massage to both arms first, and then both hands
c. never massage upper limbs during a full body massage
d. simultaneously perform arm and hand massage, using both of your hands

11. After performing your first set of effleurage strokes up and down the inside and outside of a client's arm, you can _____.

a. cover the arm and proceed to the abdominal area
b. perform gliding strokes on the client's other arm so the client feels "even"
c. apply petrissage movements by kneading the biceps and triceps alternately
d. begin joint movements by flexing the client's wrist

12. One convenient position in which to massage a client's hand is _____.

a. sitting at the client's head and reaching over his chest for the hand
b. resting the client's elbow on the table and working the palm with your thumbs
c. while the client sits on the table, before the full-body massage begins
d. to have the client extend his hand over his head

13. The sequence for hand massage includes _____.

a. petrissaging the palm of the hand, making circular movements from the heel of the hand toward the thumb and little fingers
b. rubbing the back of the hand and wrist, making circular rubbing from the client's fingers toward the wrist
c. massaging each finger, working from the base to the tip with a squeezing action
d. a, b and c in that order

14. Massage to the chest and abdomen requires sensitivity because _____.

a. the chest and abdomen may be surprisingly sensitive
b. women clients may be concerned about modesty
c. clients may feel particularly vulnerable
d. all of the above

15. If you reach with your arms and shoulders to massage the long muscles of the lower limbs (instead of shifting your body weight from side to side or front to back), you may _____.

a. strain your lower limbs
b. strain your arms, neck and lower back
c. cause the client discomfort
d. strain the client's lower limbs

16. When performing a foot massage, use _____, depending on the amount of pressure and control you wish to use.

a. your thumbs
b. the heel of your hand
c. a closed fist
d. all of the above

17. While performing back massage, gently place the client's hand in the small of her back, in order to _____.

a. check the ROM in her arm

b. give you more room to work on the back muscles around the scapula

c. give the client the sensation of stretching

d. all of the above

18. After the back is thoroughly warmed up, more intense strokes can be applied, such as _____.

a. wringing strokes up, down and across the back

b. circular rubbing strokes with your fingers

c. vibration or shaking movements at the base of the spine

d. all of the above

19. When you "walk" up the client's back by alternately moving your hands up the spine, you need to be especially careful _____.

a. when working near the kidneys and lower ribs

b. not to disturb the client's hair and makeup

c. to lean all of your weight onto your hands

d. to wear gloves

20. Before your clients leave your office, you should practice some deep breathing together, remind them of lingering after effects from the massage, and _____.

a. offer to walk them to their cars

b. ask them to hurry because another client is waiting

c. encourage them to drink water

d. all of the above

Congratulations—

You have completed Lesson 12,

Swedish Massage II—Procedures

Do not wait to receive the results of your quiz before you move on.

Lesson 13
Movement and Support IV—The Torso: Front and Back

Step 1 Learning Objectives

- ❑ After completing this lesson, you will be trained to do the following:
  - Identify bones, joints and muscles of the torso, including their locations respective to each other.
  - Explain the functional relationships among bones, joints and muscles of the torso.
  - Describe the movements of bones, joints and muscles of the torso, using appropriate terminology.
  - Identify origins and insertions of muscles of the torso.
  - Discuss range of motion (ROM) as it pertains to the areas of the torso, and identify ideal ROM for the related joints.
  - Locate and palpate (touch) some primary bones, joints and muscles of your client's torso.

Step 2 Lesson Preview

- ❑ It's a warm, sunny, spring day, and you're taking your favorite hike to the small lake nestled among the pine trees. When you reach the top of the next long hill, you're halfway there. Whether you're in the mountains of Pennsylvania, Tennessee or Colorado, the hills and lakes of the Midwest, a high desert mesa and spring "lake" in Arizona, or somewhere in northern California—coming over the top of that long hill probably evokes similar feelings. Even if you're tired, you suddenly have renewed energy for the rest of the distance. And getting there from here even seems to take less effort and time than the first half of the trip did.

In this lesson, you'll learn all about muscles, bones and joints of the torso.

In case you haven't realized it, you've reached the peak of that hill and crossed over it in this course, too! You're beyond the halfway point of the anatomical textbook portion, and that should feel good and give you lots of momentum for the last half of the material.

In this lesson, you will learn about important bones, joints and muscles of the torso (also often referred to as the *trunk*) of the body. Because the torso is the "container" for most of our internal organs, and the center to which all our appendages—including our heads and necks—attach, proper skeletal alignment and muscular tone of the torso are extremely important for good health. You might think of this "trunk" as a chest chock-full of valuable body parts and systems. The structural integrity and quality of the outside padding for this treasure chest are closely related to the health and well-being of all the valuable goods inside.

As a massage therapist, you will have many opportunities to help your clients keep their torsos in good working order. And as you work through this lesson, you'll have a chance to review some things you learned about in earlier lessons and relate that knowledge to the new material presented here. You will learn about some new bones and bony landmarks, joints and a number of new muscles. When you complete this lesson, you will have completed your study of important bones, joints and muscles of all of the body but the pelvis, thigh, and lower leg.

🕮 Step 3 What You Know and What You Will Learn—"Tor So" to Speak

- ❑ Most of us enjoy spending time with others, especially our favorite friends or family members. But if we're among a group of people we don't know, we might be much less comfortable. Even if we know only one or two persons out of twenty, we usually can relax more easily (assuming, of course, we're comfortable with those people we know).

  In this lesson, you'll recognize a few "friends" (at least, acquaintances), and they should help you feel more comfortable as well with the new information you'll be learning.

  Knowing about the bones of the human torso includes having a basic understanding of the spinal vertebrae, the sternum and the ribs, in addition to the other bones that articulate with this part of the body. You've already learned quite a bit about the sternum and the cervical vertebrae, and a little bit about the ribs. So as you work through Lesson 13, review the parts of Lessons 7 and 11 that relate to this area. For example, you will want to review the unique structures and functions of the atlas (C1), axis (C2) and C7 vertebrae; the sternum, including its landmarks and the SC joint; and what you've learned about the ribs so far.

Already familiar with these "parts," you can focus on absorbing more detail about the remaining thoracic and lumbar vertebrae, the spinal column in general and the ribs and their landmarks. We will also talk briefly about three bones you met in a previous lesson: the ilium, the sacrum and the coccyx—bones of the pelvic region that have important articulations with and attachment sites for bones and muscles of the torso.

Breaking Down the Torso (Painlessly, of Course)

To make things easier, we will group the torso into two main regions:

- The vertebral column
- The thorax

You already know that the spine consists of the *cervical*, the *thoracic* and the *lumbar* vertebrae, and that the *sacrum* and *coccyx* are bones included in the vertebral column. In this lesson, you will learn more about the vertebral column in general, and in particular about the thoracic and lumbar vertebrae, the sacrum and the coccyx.

When we refer to the *thorax*, we'll be talking about the *sternum* and the *ribs*, or *ribcage*, and the *thoracic vertebrae*. The thorax is also known as the *thoracic region*, and the bones in this region as the *thoracic skeleton*, or *bony thorax*.

🕮 Step 4 As the Spine Curves

❑ An infant's spinal column has a natural anterior curve to it (picture a baby with everything curving toward the middle, as in the fetal position he had to maintain for several months before birth). As the infant grows and develops enough bony structure and muscle strength to sit and stand upright, however, the spinal column develops a natural curvature that it must maintain to appropriately support him in an upright position throughout life.

An infant's spinal column has a natural anterior curve to it.

In this brief step, you will learn the basics of the spinal curves, so you can follow those curves as you learn more about the bones, landmarks and muscles of the vertebral column.

Following the Spinal Curves

The spine's natural curvatures are important to:

- Provide balance and equilibrium to the body
- Absorb shock/energy (including the "shock" the body experiences every time our foot hits the ground when we walk or run)
- Maintain a level "sensory plane." What is the **sensory plane**? It's the plane of your eyes and ears. If your eyes and ears bounced up and down as you walked, you'd quickly become dizzy (try doing it deliberately for a even a few seconds and you'll get the picture). Fortunately for you, your spine is designed to distribute the forces that result from your steps in such a way that your eyes and ears are normally kept fairly level. A healthy spine viewed laterally is a crooked spine, with four natural curvatures from top to bottom (as you can see in Figure 13-1).

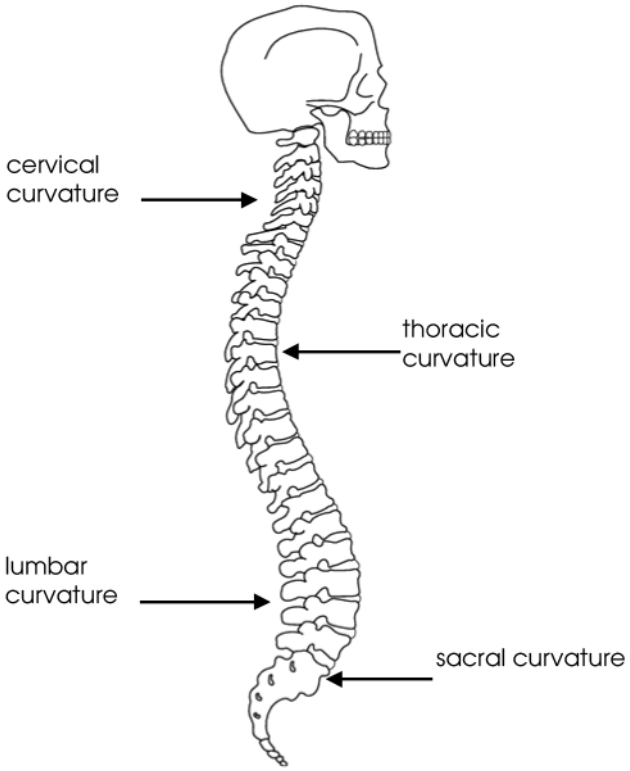


Figure 13-1: Lateral view of human spinal (vertebral) column, with skull

Just remember that the spine naturally curves inward at the cervical and lumbar regions, and outward at the thoracic and sacral (near the sacrum, or "tailbone") regions. Extremes of curvature exist, and you'll probably come across some of these conditions in your massage therapy practice.

People who have suffered multiple whiplashes—for example, from car accidents—are often vulnerable to a much larger than normal curvature at the cervical area. A **hunchback** condition is when the thoracic curvature is larger than normal, which creates a hump on the back. The medical name for "hunchback" is *kyphosis*. The medical name for "swayback" is *lordosis*. A **swayback** condition occurs with a larger than normal lumbar curvature. An abnormal, *lateral* curvature of the spine is called **scoliosis**, which is frequently identified in children and young people through health screenings at school. Scoliosis can be improved in many individuals but can be a source of various health problems if it's left untreated.

Step 5 Bones and Bony Landmarks of the Vertebral Column

- In this step, you will meet some of those friends and acquaintances we mentioned earlier—the cervical vertebrae—and you'll learn more about the other regions of the spine, including the thoracic and lumbar vertebrae.

  You'll also briefly meet a few other bones and landmarks associated with the lumbar region but that are more connected to the pelvic area. You'll learn more about these parts later, in Lesson 15.

Thoracic Vertebrae

You're already familiar with the cervical vertebrae, including the atlas (C1), axis (C2) and C7. The 12 **thoracic vertebrae** make up the next section of the spinal column. To identify these vertebrae, first locate the spinous process of C7. The vertebra just below C7 is T1, and you can count down through the next 11 vertebrae to identify the remaining thoracic vertebrae.

You can see the unique structure of the thoracic vertebrae in Figure 13-2. Notice that the spinous processes of these vertebrae compared to those of the cervical vertebrae are both longer and much less horizontal (those of the thoracic vertebrae point downward rather than extend horizontally).

Notice the hole in the vertebra, labeled the "vertebral foramen." All vertebrae contain a vertebral foramen, the hole through which the spinal cord passes.

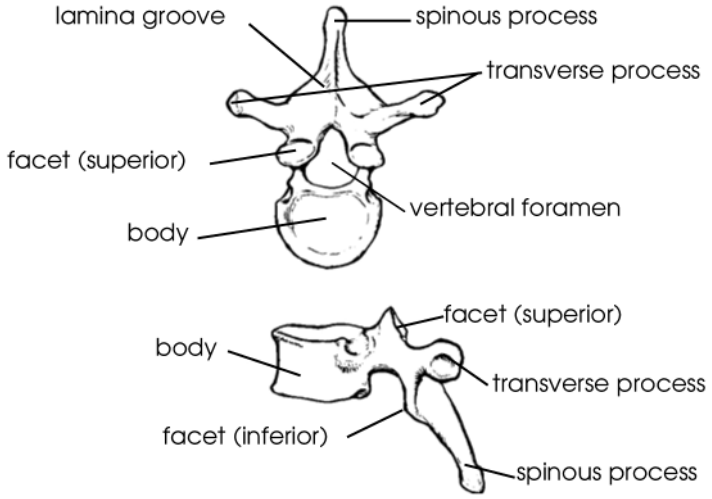


Figure 13-2: Superior and lateral views of thoracic vertebra

Lamina Groove

Another landmark of the thoracic and lumbar vertebrae is the area between the spinous and transverse processes of each vertebra. This area is called the **lamina groove**. The width and depth of this groove increases with each vertebra down the spine. The lamina groove is filled with layers of muscles, so it's difficult to palpate directly. You can identify the regions of the lamina groove by the bordering transverse and spinous processes.

Lumbar Vertebrae

Just distal to the thoracic vertebrae are the five lumbar vertebrae. Locate the T12 vertebra; the first spinous process below T12 is that of the first lumbar vertebra. Notice how much larger and more horizontal the lumbar spinous processes are than those of the cervical and thoracic vertebrae. Overall, the lumbar vertebrae are broader and thicker, and they have more space between their processes. Look again at the size and shape of these vertebrae in Figure 13-3.

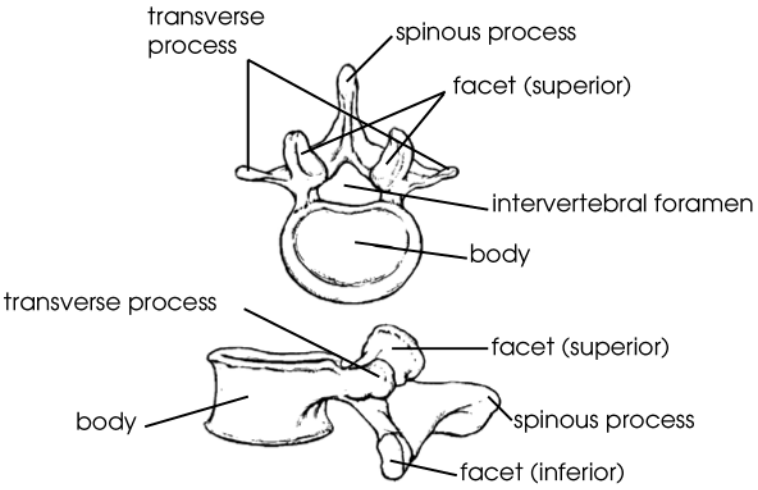


Figure 13-3: Close-up superior and lateral views of lumbar vertebra

Hello Again, Ilium

In previous lessons, you met the upper bone of the pelvis, whose anatomical name is the **ilium**. You'll learn more about it in Lesson 15. For now, we'll mention a relevant bony landmark of the ilium, which is the **iliac crest**. The iliac crest is the superior ridge of what we commonly call the "hipbone." You can usually locate and palpate the iliac crest quite easily on either side.

Finally, we want to remind you of two other bones in the pelvic girdle, just so you recognize them when their names come up later in this lesson. You also will learn more about these bones in Lesson 15 when you study the pelvic region. These bones, which we introduced you to earlier, are the *sacrum* and the *coccyx*. The **sacrum** is the broad, flat bone at the base of the spine between the pelvic bones, and the **coccyx** is the "tailbone" at the base of the sacrum.

These bones are actually fused vertebrae and are considered part of the vertebral column.

To review the bony relationships of the posterior vertebral column, look carefully at Figure 13-4, and notice the locations and relationships among the labeled bones.

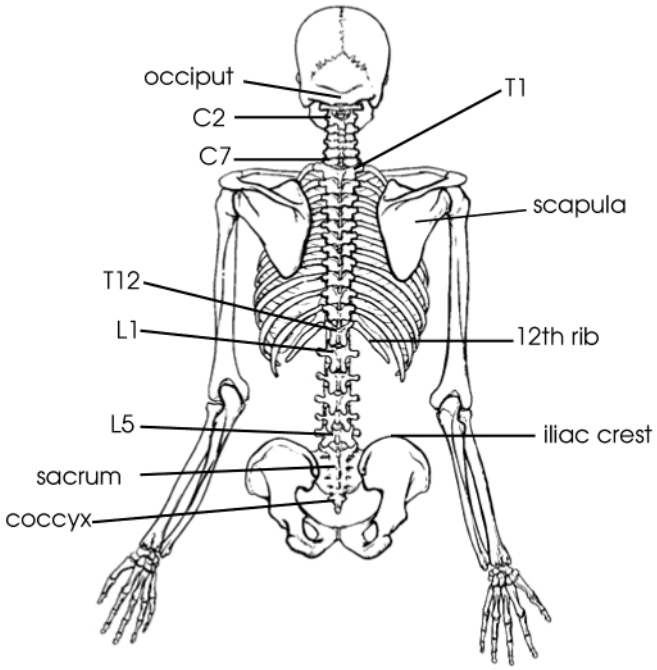


Figure 13-4: Posterior skeleton: bony relationships of vertebral column and nearby bones

Step 6 Bones and Landmarks of the Thorax

- When we think of treasure chests, we often picture intricately carved wooden trunks overflowing with wealth—gold and silver coins, diamonds, rubies, and other gems. Although its "valuable goods" are of a different kind, the **bony thorax**, or human chest region, is also home to priceless goods: some of the body's vital organs—particularly the heart and lungs. The ribcage also helps protect the liver, stomach, kidneys, and upper intestines, along with a number of other essential organs and glands.

A treasure chest with valuable goods.

In this step, we will recap what you've learned to this point about the bones and landmarks of the bony thorax, or ribcage area, and introduce you to a few new ones. When you've completed this section, you'll have a solid framework (other than the spaces between the ribs, of course) to which you can attach the primary muscles of this part of the body.

The Sternum

You're already familiar with the sternum and its respective parts: the manubrium (the broadened top of the sternum), the body and the xyphoid process (the inferior, pointed end of the sternum). Also remember that the sternum articulates with the two clavicles to form the SC (sternoclavicular) joints.

You should know about one other bony landmark for the sternum: the *jugular notch*. The **jugular notch** is located at the top of the sternum, and you can easily locate and palpate this spot. The notch might be either slightly curved or flat, depending on the individual.

To expand your understanding of the sternum and its role in breathing, or *respiration*, you should know that the connection between the manubrium and the body of the sternum is a fibrocartilage joint that moves slightly in expansion and contraction when you breathe in and out.

The Ribcage, Associated Landmarks and Joints

Think about what you already know about the ribs from previous lessons:

- The ribs are located in the thoracic (chest and back) region of the body, and they form the supporting structure for the heart, lungs and other important organs.

- The ribs are actually connected to the sternum by **costal cartilage** (*costal* is Latin for *rib*). In the first seven ribs, this cartilage is somewhat bone-like (and as we get older, it often becomes even more ossified, but still has more flexibility than bone). Also, each of the first seven ribs has its "own" cartilage. Because of this, we say the first seven ribs articulate directly with the sternum, and we call them **true ribs**. Ribs 8 through 10 articulate with the ribs only by way of the cartilage attached to rib 7, so we call them **false ribs**. We call ribs 11 through 12 **floating ribs** because their distal ends "float" in the muscles of the abdominal wall.

Let's elaborate on this information and add a few more details to flesh out your knowledge and understanding of the ribs:

- The spaces between the ribs, which are filled with muscle, are called *intercostal spaces*.

- Except for the joint between the first rib and sternum, all of the ribs form *synovial* joints with the sternum. These (sternocostal) joints are *plane* joints. (The first rib forms a cartilaginous joint with the sternum, which isn't as movable, thereby anchoring the rest of the ribcage.)

From their articulations at the sternum, the ribs curve around the thorax to the posterior of the body. There, the ribs form a network of synovial joints (called vertebrocostal joints) with the thoracic vertebrae of the spine. These joints are also plane joints. They are commonly called "rib" joints, even by doctors and chiropractors.

Their articulations with the sternum and the thoracic vertebrae, as well as their intercostal cartilage, give the ribs flexibility as the torso twists, flexes, extends, contracts and expands with all its possible movements, including breathing.

To bring together all this bare-bones information about the structure and function of the ribs and thoracic region before we cover it up with muscles, carefully review Figure 13-5. Visualize how the ribs would move as you move your torso forward, backward and sideways, and imagine the movements that inhaling and exhaling deeply would create in the region.

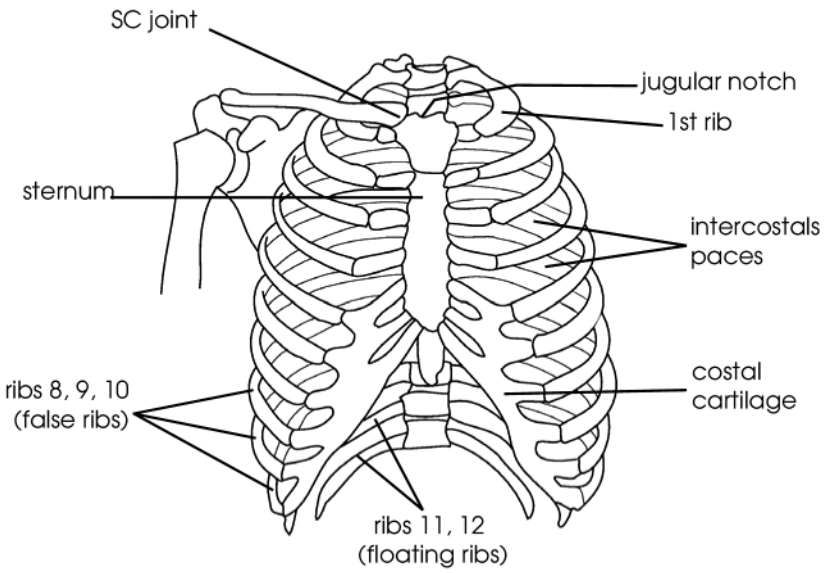


Figure 13-5: Thoracic skeleton with right shoulder, anterior view

A Final Bone and Landmark

Because it's an attachment point for abdominal muscles, we need to mention one other bone and landmark that you will study in more detail in Lesson 15. The bone is the *pubis* and the landmark is the *pubic crest*.

The **pubis** is the anterior portion of the pelvis, which lies low to the abdominal region. To quickly locate this bone, gently rest your flattened palm on your navel, fingers pointing toward the floor, and move your hand down to the bony region at the base of the front of your trunk. This is the bone called the **pubis**. The two pubic bones articulate with each other at this location to form a horizontal ridge about two inches wide, the **pubic crest**.

You can see the pubis and pubic crest in Figure 13-6.

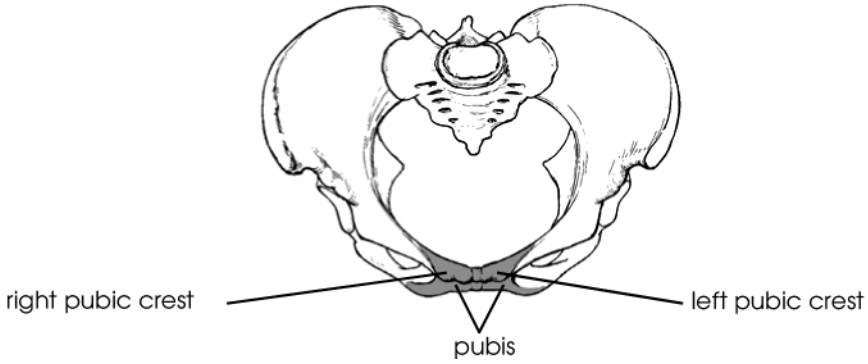


Figure 13-6: Pubis, pubic crest and pelvic girdle, superior view

This rounds out our discussion of the bones, landmarks and joints of the ribcage and thorax region. After you complete a brief review of what you've learned so far in this lesson, you'll be ready to put a little meat on those bones and look at the many muscles of the torso, both front and back.

✍ Step 7 Practice Exercise 13-1

❑ Match each term with the correct word or phrase. Not all phrases will be used.

1. _____ **cervical vertebrae**
2. _____ **coccyx**
3. _____ **false ribs**
4. _____ **floating ribs**
5. _____ **hunchback (kyphosis)**
6. _____ **iliac crest**
7. _____ **jugular notch**
8. _____ **lumina groove**
9. _____ **lumbar vertebrae**
10. _____ **pubis**
11. _____ **respiration**
12. _____ **scoliosis**
13. _____ **swayback (lordosis)**
14. _____ **bony thorax**
15. _____ **true ribs**

a. breathing
b. area between vertebral processes
c. first seven vertebrae
d. pelvis
e. includes the sternum, ribs and thoracic vertebrae
f. last five vertebrae
g. larger-than-normal thoracic curvature
h. larger-than-normal lumbar curvature
i. lateral curvature of the spine
j. located at the top of the sternum
k. middle 12 vertebrae
l. front bone of the pelvis
m. superior ridge of the hipbone
n. "tailbone"
o. ribs 1 through 7
p. ribs 8 through 10
q. ribs 11 and 12

Step 8 Review Practice Exercise 13-1

❑ Compare your answers to Practice Exercise 13-1 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 9 Back Muscles

- If you're a good mechanic—whether that means you're good at fixing cars, repairing broken furniture or taking apart the vacuum cleaner—you probably agree that when something is all in one piece and working properly, it often looks quite simple. But when that same thing is strewn about in many pieces, it looks much more complicated.

  You usually have to put the pieces back together in a certain order, too, because pieces and parts must fit next to or on top of each other in a particular arrangement to work correctly. And if the machine or furniture is complicated, you will probably have to put groups of pieces and parts together first, and then fit each of those groups together with other parts and groups for the entire system to work. In fact, the more complex the machine, the more likely that groups of parts go together to form other groups that also work together.

  The human body is like a complex machine, in that when it's all together and working properly, it might appear from the outside to be quite simple. But you already have a good idea by now that under the surface, the human body is an amazing network of all kinds of systems that interconnect and work together.

  At this point in the course, you've already learned about and even palpated a number of the parts and pieces of this human "machine"— the upper limb; the shoulder girdle; the head; and the neck. And you've already come across some components that function in more than one of these body regions. Now, as you learn about the muscles of the back, you will discover that you already know several of these muscles and muscle groups, because they also belong to other "parts" you've learned about.

  So even as you are adding more names and details to what you already know about the human body, your awareness of how everything "fits" and works together will become much clearer. Who knows—by the time you've completed the course, you might even look at the body as a brilliant masterpiece, but not *that* confusing! Either way, you'll have the firm grasp (but gently, of course) of basic human anatomy you need to do good work in your new profession as a massage therapist.

  Now let's get "back" to a review of some of what you already know, and then we'll introduce you to all the muscles you haven't yet studied that are also part of the back region.

A Brief Look Back

From Lesson 7, you may remember a landmark called the *thoracolumbar fascia*, which we briefly identified as the flat, diamond-shaped band of tendon that stretches across the surface of the posterior thorax, from the low back to the upper ridge of the ilium to the lower thoracic vertebrae.

In Lesson 11, you began learning about a muscle of the neck and upper back called the trapezius. We focused on the upper part of the trapezius before.

The Trapezius

You recall that the large, flat trapezius ("traps" for short) muscle fibers extend across the back, posterior shoulders, and up the back of the neck. The traps originate from the occipital bone and from the spinous processes of the C7 through T12 vertebrae. The traps have a broad base of insertion points, including the acromion process, the spine of the scapula, and the lateral clavicle. The fibers of the upper traps descend from the occiput and cervical vertebrae to their insertions across the upper shoulder region. The fibers of the middle trap are generally horizontal. And the fibers of the lower trap ascend from their origins in the lower thoracic vertebrae upward to their insertion points.

You can see the complete trapezius muscle in Figure 13-7.

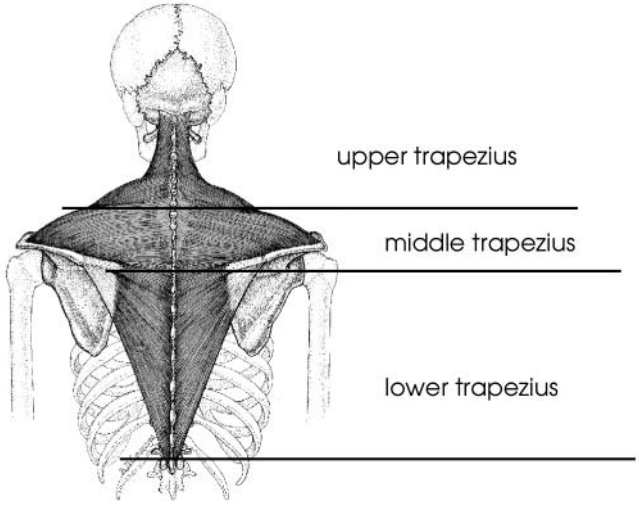


Figure 13-7: Trapezius muscle: upper, middle and lower fibers

Before we talk about the movements of the traps relative to the scapula, let's go over a few movement terms as they pertain to the scapula. Follow along by moving your shoulder as you read. To depress the scapula means to move it downward. Create this movement, and try to identify which muscles are involved as you feel the movement. Stabilizing the scapula means to hold it in balance so that the tension on it is equalized, and it is not abnormally retracted, depressed or elevated. Upward rotation of the scapula would be the movement it's making when you raise your upper limb sideways and over your head. An example of downward rotation of the scapula would be the movement it makes when you paddle a canoe.

The movement you make when you paddle a canoe is an example of downward rotation of the scapula.

The primary movements of the upper trap are to elevate the scapula and to extend the head. The middle fibers of the traps also retract and stabilize the scapula, and the lower fibers depress and upwardly rotate the scapula.

The Rhomboids

Underneath the trapezius muscles is another set of muscles called the **rhomboids**. If you know much about mathematics, you might remember that a rhomboid shape is a rectangle that's been pushed sideways, and that's the shape of these muscles. The rhomboids consist of a rhomboid major and minor, but all you need to remember for this course is their general name as a group.

The fibers of the rhomboids originate from the spinous processes of the C7 through T5 vertebrae and insert all along the medial border of the scapula. The muscle fibers run evenly, at a slanting angle, within this region.

The rhomboids' primary actions are to retract, elevate, and downwardly rotate the scapula. Visualize these movements as you look at Figure 13-8.

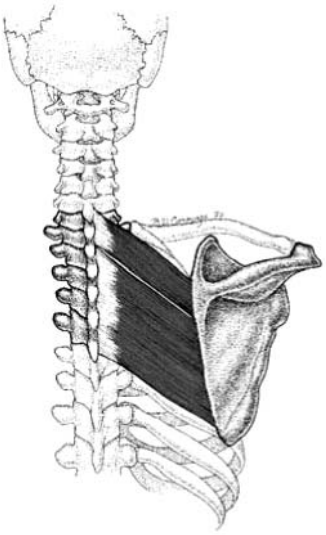


Figure 13-8: The rhomboid muscles

The Erector Spinae Muscle Group

When you see the name of this muscle group, the **erector spinae**, you might be reminded of that erector set you or your little brother or sister used to build things with. And in fact, that might be one good way to think about these muscles. This group of muscles represents layering of muscle fibers that originate in multiple places, from the base of the spine all the way up to the spinous process of C7. To help you learn the name of this group of muscles otherwise, remember that "erector" has to do with "upright" or "vertical," and that "spinae" means "spine." These muscles are commonly called the **spinal erectors**.

And the Latin Name Is …

As in earlier lessons, for the language enthusiasts among you, we'll give you the Latin names of the three main muscle groups in this larger set, but you don't need to remember the names for this course. The main branches of the erector spinae are the *spinalis*, the *longissimus* and the *iliocostalis* groups. (And because of all you know about Latin roots and meanings, you can probably figure out a lot about each muscle as well, based on their names.)

What a (Not Necessarily Tangled) Web They Weave

The long erector spinae muscles insert and radiate from many points along the length of the spinal column. So if you or your siblings built any of those tall, multi-branching structures with the erector set, just consider that experience an early introduction to the structure of the erector spinae muscles.

Specifically, the origins for these muscles include the thoracolumbar fascia; the iliac crest; the spinous processes of the lumbar, thoracic and C7 vertebrae; the transverse processes of T1 through T5; and the posterior surface of the 12 ribs.

The erector spinae muscles insert into points on all the posterior ribs, the spinous and transverse processes of the cervical (except C1), thoracic and lumbar vertebrae, and the mastoid process of the temporal bone. Quite a widespread network, isn't it? Look carefully at Figure 13-9 to see this broad, long region the erector spinae muscles cross.

Figure 13-9: The erector spinae muscle group

Moving Along with the Erectors

If you're wondering what this large network of varying long muscles might do, here's your answer: Deep to the traps and rhomboids, the erector spinae muscles help maintain erect posture, and extend the vertebral column (as when you're upright and arching your back to try to see that noisy airplane flying right above your head). These muscles also laterally flex the vertebral column to the same side (as when you reach straight down your right side with your right arm and try to touch your fingers to the floor at the outside of your right foot).

When you think about all the joints and junctions in the spinal column, and between the spine and the ribs—and all the movements we can do because of these joints—you can better appreciate the job these branching erector muscles do every day.

The Transversospinalis Muscle Group

There is also a group of muscles even closer to the spine than the erector spinae, which, when they contract, serve to help the spine balance all the forces it undergoes—the **transversospinalis muscle group**. These muscles are so deep you won't be studying them unless you go into advanced clinical bodywork.

You can see this group of muscles in Figure 13-10.

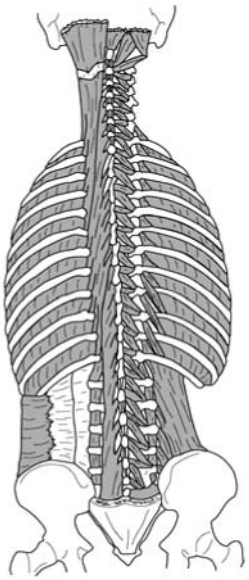


Figure 13-10: Transversospinalis muscle group with intercostals

The Quadratus Lumborium (QL) Muscle

The **quadratus lumborum (QL)** muscle lies close to the posterior wall of the abdominal cavity. The QL is often referred to as the "hip hiker" because of its important role in this movement. The QL originates in the posterior iliac crest of the hipbone and inserts in the transverse processes of the L1 through L4 lumbar vertebrae, and across the twelfth rib. So the fibers of this muscle fan out to cover much of the region of the low back between the twelfth rib and the upper edge of the hipbone. The QL is a deep muscle. Because it is so deep and lies near the kidney, don't try to find the QL until you are in the supervised, hands-on section of this course.

The motions of the QL are to elevate the hip and laterally flex the spine. Also, because of its insertion across the twelfth rib, the QL helps stabilize this rib during forceful exhalation of air.

You can see the location of the QL relative to the bones of the region in Figure 13-11.

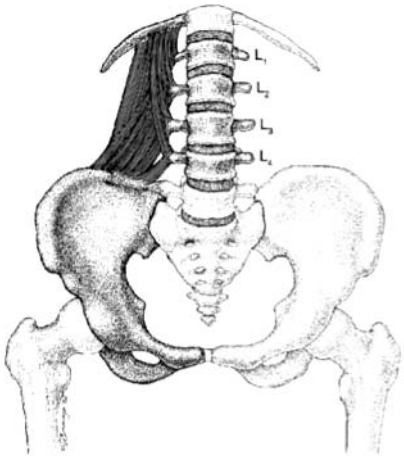


Figure 13-11: The quadratus lumborum (QL) muscle, anterior view

Step 10 The Anterior Muscles of the Torso

- An important principle in massage therapy, as in life, is that of balance. Remember our discussion in an earlier lesson about Newton's Third Law of Motion: For every action, there's an equal and opposite reaction? That's the idea behind the principle of balance. For example, think about the client who will call you one day soon to schedule a massage because his biceps are tight and sore. (He's just moved, and he spent the weekend lifting and carrying many heavy boxes.) The concept of balance in this example is that if this client's biceps are tight, or overcontracted, their antagonists—in this case, the triceps—are also going to be tight because they will have been working, too.

If the biceps are tight, the triceps are also tight.

With this idea of balance in mind, we're going to introduce you to the primary muscles on the anterior side of the torso. Some of these muscles— particularly the abdominals—work together with the erector spinae to help keep your body upright and in good posture, and their strength (or lack of) is quite important in relationship to a strong and healthy back.

The Abdominals

The abdominal region is in many ways one of the more vulnerable areas of the body because there is no bony structure to protect it. So it's protection is largely due to the four, large abdominal muscles that together form a "girdle" that extends upward to the fifth rib, downward to the pubic crest, and laterally around to the thoracolumbar fascia of the lower back. Together, these four muscles form a tremendous crisscross of strong muscle fibers to help stabilize the entire abdominal region and its contents. And this stability and strength also are essential to supporting and maintaining a strong and stable back, and to helping hold our bodies in a balanced, upright posture.

The four muscles of the abdominal group are the following:

- Internal obliques
- External obliques
- Transversus abdominis
- Rectus abdominis

Before we take a closer look at these muscles, you should know about two other elements of the abdominal region.

The Linea Alba

We haven't "talked Latin" for a while, so now's a good time to do so as we introduce you to a landmark associated with the abdominal region. The **linea alba** (in Latin, *linea* means *line* and *alba* means *white*) is where fascial elements from either side of the abdominal oblique muscles meet; this "line" provides an attachment site for the abdominal muscles.

The Abdominal Fascia

Just as the thoracolumbar fascia extends across a region of the lower back, the superficial **abdominal fascia** (sometimes called the **abdominal aponeurosis**) extends across the central region of the abdomen to provide both a fascial covering and strength to the region and an attachment site for abdominal muscles.

Transversus Abdominis

The **transversus abdominis** muscle's name tells its story, just as many other muscle names tell theirs. The fibers of this deep anterior abdominal muscle run horizontally, or transversely, across the abdominal region. The primary "action" of this muscle is to contain the **viscera**, which means all the "internals," or soft tissue and organs of the abdominal region.

The transversus abdominis originates in the cartilage of the lower six ribs, the thoracolumbar fascia at the back, the iliac crest, and the **inguinal ligament** (a ligament that runs from the anterior iliac crest down to the pubic crest). This muscle inserts along the abdominal fascia to the back of the linea alba.

You can see the location and shape of the transversus abdominis muscle in Figure 13-12.

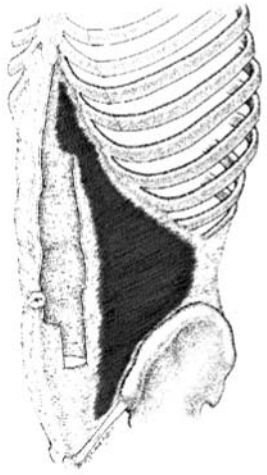


Figure 13-12: Transverse abdominus muscle

Internal and External Obliques

We'll look at the abdominal oblique muscles together because they serve as antagonists to each other and together are responsible for similar actions on the opposite sides of the abdominal region. The thin fibers of the **internal oblique** muscles are deep and run perpendicular (at a 90-degree angle) to the external oblique muscles. The broad, superficial **external oblique** muscles also run diagonally. The external oblique fibers run like hands in pockets; the internal oblique fibers run the opposite way, like hands turning up and in.

Together, the internal and external obliques are the major right and left rotators of the spine. When you rotate to the right, the internal obliques on the right side and the external obliques on the left side contract. When you rotate to the left, the internal obliques on the left side and the external obliques on the right side contract.

When both the internal and external obliques on the *same* side contract, the result is lateral flexion to that side. For example, with your left arm flat, palm facing toward your side, bend sideways and try to touch the side of your ankle with your fingertips. This movement is lateral flexion, and you're contracting both the internal and external obliques of the left side as you move.

To help you differentiate between the internal and external obliques on each side of the abdomen, remember that the fibers of the *external* obliques run from the *outside*, or lateral area of the body inward and downward, toward the middle. In contrast, the *internal* obliques run from the *inner*, or midline region of the abdominal region outward and downward toward the lateral hip region.

Look at Figures 13-13 and 13-14 to see the locations and directions of the fibers of the external and internal oblique muscles. Rotate your torso to the right and the left as you study these figures, and picture which muscles are contracting and which muscles are stretching as you twist in each direction.

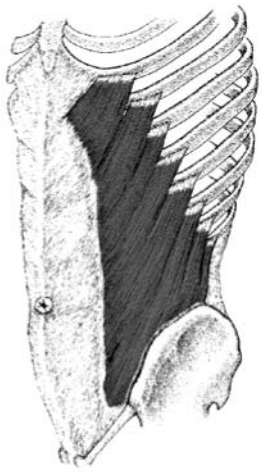


Figure 13-13: External oblique muscles

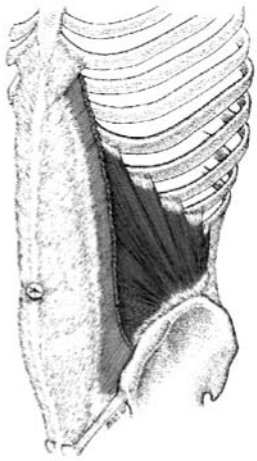


Figure 13-14: Internal oblique muscles

Rectus Abdominis

If you have a picture of that good looking man or woman with the "washboard" abdominals handy, the muscle you're looking at that creates the washboard effect is the **rectus abdominis**. The rectus abdominis originates in the pubic crest and inserts high in the abdominal region, in the cartilage of the fifth through seventh ribs and the xyphoid process. The fascial band where the external obliques meet in the middle encloses the rectus abdominis.

The movement for this muscle is to flex the vertebral column (which you know well if you're experienced at doing the crunches necessary to keep the rectus abdominis in good shape). When this muscle is weak and flaccid, the strength of the back muscles is also often compromised. When people have a "swayback" appearance, one cause might be a weakened rectus abdominis muscle (of course, if this muscle is weak, chances are good that the other abdominal muscles are also weak).

Review Figure 13-15 to see the region the rectus abdominis covers, and visualize this muscle contracting as you bend forward and flex your vertebrae.

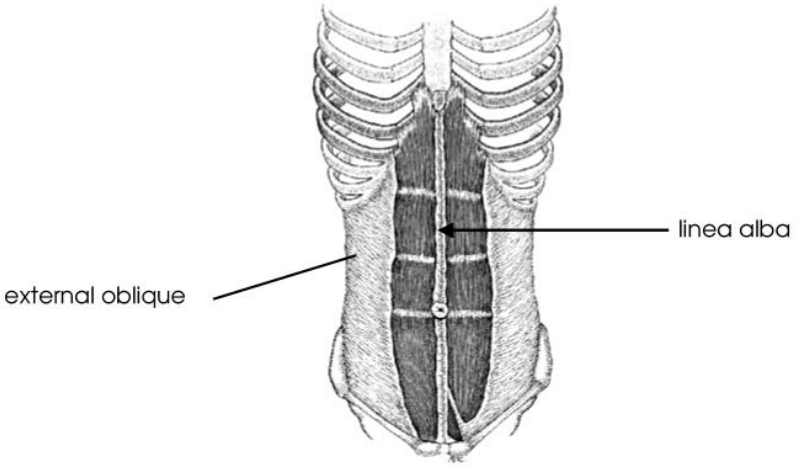


Figure 13-15: The rectus abdominus muscle

Before you go on to the next section, briefly review the diagrams of all the abdominal muscles to be sure you understand their placement relative to each other: the horizontal fibers of the deep transverse abdominis, the crisscrossing diagonal fibers of the external and internal obliques, and the strong vertical fibers of the rectus abdominis.

The Diaphragm

Take a deep breath—and thank your *diaphragm* for helping you do so! The **diaphragm** is our body's main muscle of respiration, or breathing. This muscle, which looks a little like a broad, opened umbrella, originates on the inner part of the xyphoid process, the inner portion of ribs 7 through 12, and the upper two or three lumbar vertebrae. The diaphragm muscle inserts in a central tendon that lies across the superior portion of the diaphragm.

The dome-shaped diaphragm divides the thoracic cavity (the cavity enclosed by the ribcage) into two portions and forms the floor of the upper cavity.

Look at Figure 13-16 to see the diaphragm's basic shape and location.

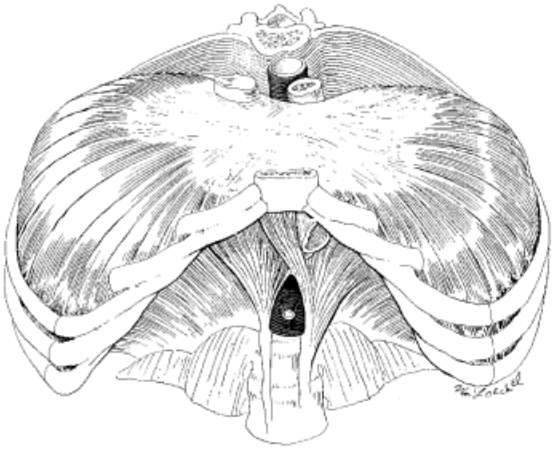


Figure 13-16: The diaphragm

When we breathe, we actually breathe in (**inspiration**) with the aid of the diaphragm; we breathe out (**exhalation**) automatically, as the diaphragm muscle fibers relax. Look at the illustration of the diaphragm and visualize the process as you read through these steps that outline how breathing works:

1. The muscle fibers of the diaphragm contract, which makes the dome of the diaphragm move down.
2. The additional space in the thorax from the dome moving down creates a vacuum, and air is drawn into the lungs to fill this vacuum and equalize the pressure.
3. The diaphragm muscle relaxes, which lets the dome rise back up, and forces the air out of the lungs and out of the body.

Breathe in and out a few times and visualize this process in action. Notice the feeling of tension in the muscles as you inhale, and the sense of relaxation as you exhale.

The Intercostals

Now that you know how to breathe, let's take a look at all those little muscles that crisscross the regions between the ribs. If you're a meat eater, you might already know about these muscles without realizing you do. The intercostals of cattle and pigs are the "meat" on the spare ribs or back ribs that are many people's barbecue favorite.

Similarly to the internal and external obliques, the internal and external intercostals have fibers that run at diagonal angles in opposite directions to each other. You can see these angles in Figure 13-17. In fact, you might think of these muscles as extensions of the lower obliques. The intercostal muscle fibers are small and slender. The intercostals originate on the inferior border of the rib above and insert on the superior border of the rib below.

The intercostals provide stability to the ribcage and maintain the spatial relationship among the ribs as they move. The external intercostals lift the ribs as you breathe in, and the internal intercostals draw the ribs down as you breathe out. You can gently palpate the regions between the ribs where the intercostals are located.

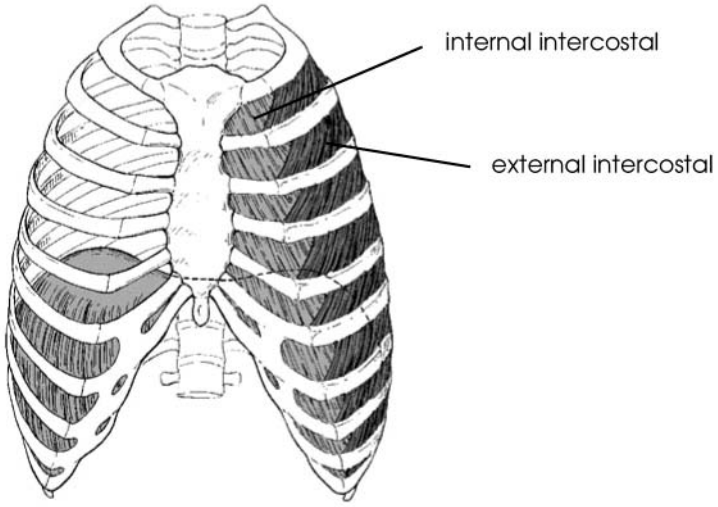


Figure 13-17: The intercostals

The Serratus Anterior Muscle

The last muscle you'll learn about on the torso is the **serratus anterior** (some people call this muscle the **anterior serratus**, so don't be surprised if you hear that name). This muscle's name comes from the fact that its fibers are serrated, or notched (from the Latin *serratus*, which means *a notching*). This muscle lies in the lateral regions of the ribcage, with most of its fibers deep to the scapula, the lats and the pec major. The serratus anterior attaches to both the ribs and the scapula, originating on the surfaces of the upper eight or nine ribs and inserting underneath the scapula on the medial border of its anterior surface.

The action of the serratus anterior is primarily upward rotation of the scapula, although it is also involved in protraction and depression of the scapula.

The anterior portion of this muscle is easy to palpate in the underarm region. But because the serratus anterior lies in the area that for many people can be ticklish, you'll want to be sure you have your client's permission before you work on it.

You can see the location of the serratus anterior muscle and its attachments to the ribs and scapula in Figure 13-18. Imagine how raising the arm above the head and lowering it, and the associated scapula rotations, would involve the movements of this muscle.

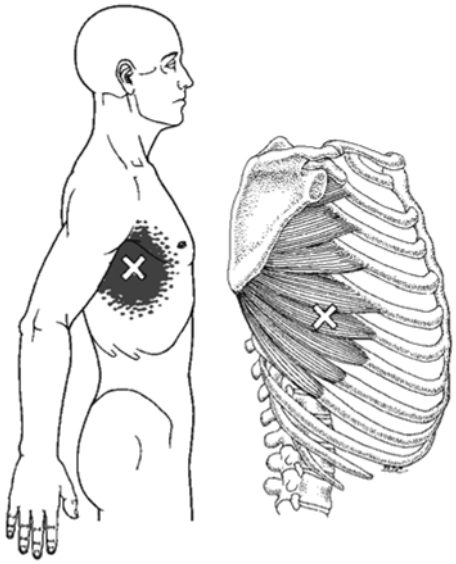


Figure 13-18: The serratus anterior muscle

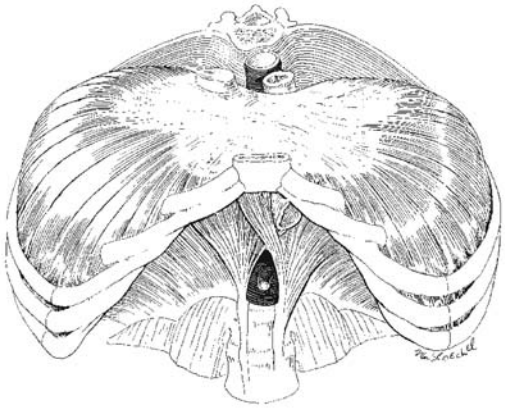
Wrapping Up the Torso

You've almost completed another detailed anatomy lesson about a major section of the human body—the torso, front and back. Your journey through the human anatomy has brought you around the heartland and close to many of the inner workings of this amazing human "machine." By the end of this lesson, you'll have the essentials you need to practice your basic knowledge and skills on the entire upper body, and a few regions of the lower torso as well. Take a few minutes now to review what you've learned about the muscles of the torso, and then you'll be ready to work through the Practical Checklist for this part of the body.

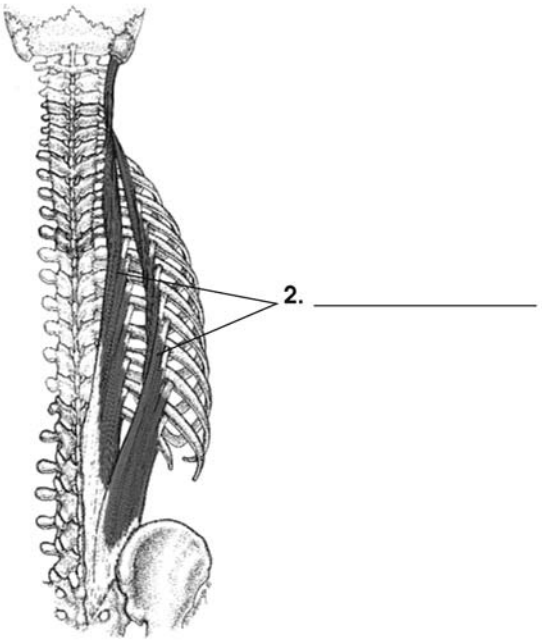
✍ Step 11 Practice Exercise 13-2

❑ Select the correct muscle from the list to label each diagram.

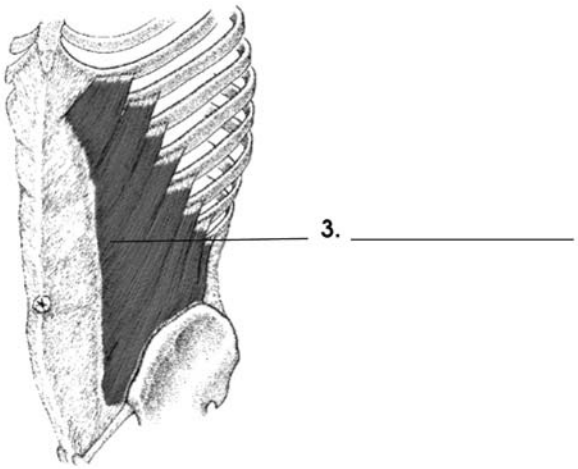
intercostals	erector spinae	quadratus lumborum
linea alba	lower trapezius	middle trapezius
diaphragm	internal obliques	external obliques
upper trapezius		



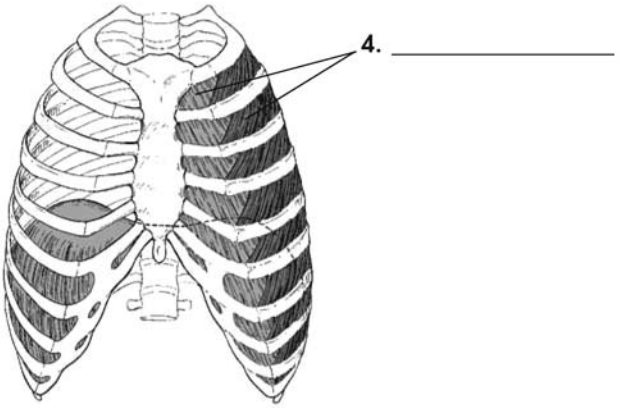
1. _____



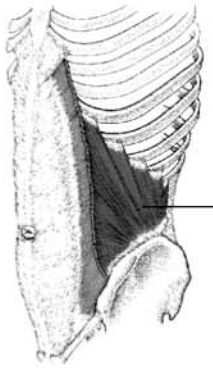
2. _____



3. _____



4. _____



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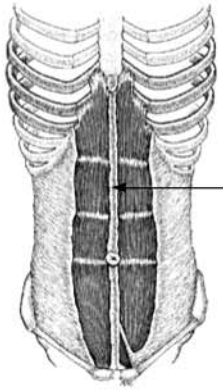

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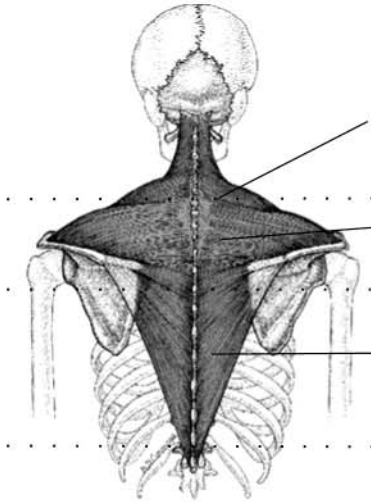
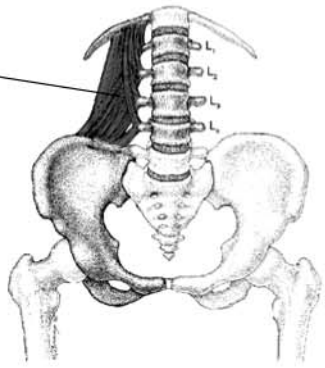


7. _____

8. _____

9. _____

10. _____



✍ Step 12 Review Practice Exercise 13-2

- ❑ Compare your answers to Practice Exercise 13-2 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

🕮 Step 13 Anatomy Flashcards

- ❑ Go ahead and take out The Torso: Front and Back Anatomy Flashcards. You'll notice that they show the muscles, joints and bony landmarks of the front and back. On the back of muscle cards, you'll see the origins, insertions and actions listed for each.

  Make it a goal to learn two of the flashcards each day. Don't get bogged down in memorizing the origins and insertions—that knowledge will come with experience. While it's a good idea to become familiar with the origins and insertions, make it a goal to really learn the name and the actions of each muscle, along with the bony landmarks and joints of the region.

  Knowing the bones, joints, muscles and their actions is the foundation of your massage therapy hands-on skills. Just take it one step at a time—your anatomy flashcards make it easy!

🕮 Step 14 Pronouncing Terms

- ❑ Follow these steps:

  1. Take your Quick-Learn Tutor and Set 8 terminology cards out of your Quick-Learn Tutor Kit. Insert the first flashcard for Set 8 into Side A of the Tutor.
  2. Put your pronunciation CD in your CD player.
  3. Listen to each term as it is pronounced on the CD. After you hear the term, put the CD player on pause.
  4. Look at the term in the left window of your Quick-Learn Tutor and practice pronouncing the term aloud several times until you can pronounce it correctly and easily. Push the terminology card up and read the meaning of the term. Continue this process for all of the terminology cards in this set.
  5. Next, put the terminology cards in order and run the CD again. This time, do not stop the CD. Repeat each term after you hear it.

🕮 Step 15 Learn the Meanings of Terms

Follow these steps:

1. Again insert the first terminology card for Set 8 into Side A of your Quick-Learn Tutor. Pronounce each term and then say the meaning. Check yourself by pushing the terminology card up until you can see the meaning of the first term in the right window.
2. Now insert the terminology card into Side B of your Quick-Learn Tutor. Push the card up until you see the meaning of the first term in the right window. Read each meaning aloud, and then say the term. Check yourself by pushing the terminology card up until you can see the term in the left window.
3. Practice with the terminology cards several times until you're familiar with the terms and their meanings.
4. Allow a reasonable amount of time for terminology card review. When you feel comfortable with the pronunciation and meaning of each term, go on to the next step.

🕮 Step 16 Practical Checklist

- ❑ As you work through the Practical Checklist for the torso, keep these points in mind to help you and your "client" have the best experience:
  - Always check first to be sure it's okay with your client that you palpate any areas outlined in the checklist. And then check in with your client regularly as you explore and palpate the back regions, the ribcage, and the abdominal areas. In particular, because some of the bones, landmarks, and muscles lie in or close to the chest region, be sure you stay away from the areas of breast tissue if your client is female. Even if your client is male, be aware that muscle and other tissue in and around this region might be more sensitive than other parts of the body. And stay in touch (with words as well as hands) throughout each step to be sure your client is comfortable with what you are doing.
  - Be aware that the region up and down the sternum can be particularly sensitive because it includes a number of lymph nodes. Also, part of the serratus anterior spans a ticklish zone for many people, so respect your client's wishes if she isn't comfortable having you palpate this muscle. You can probably find another friend or relative who isn't ticklish and who will volunteer for you to practice in this area.
  - The abdominal region is also particularly vulnerable for many people because it has no bony structures to protect it. For this reason, and because there are so many organs in this area, the abdominal muscles are not included on your checklist.

- As always, take your time, relax and help your client to relax as you work through the steps. If you aren't able to locate a particular bone, landmark or muscle, just make a note of it and be ready to give particular attention to that location when you get to your hands-on experience at the end of the course.

When you've completed the checklist and you're comfortable with the material in this lesson, go ahead and complete the Mail-in Quiz and go on to Lesson 14.

Practical Checklist—Torso, Front and Back			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
_____ _____ _____ _____ _____ _____	**Spinal Vertebrae, Landmarks and Muscles** ▸ cervical ▸ thoracic ▸ 12th rib ▸ lumbar ▸ iliac crest	You'll need a "client" for these steps. Have your client lie face down, with a pillow or other support under the head and neck. First, let's briefly review the cervical vertebrae so you can experience palpating the entire spinal column. Carefully explore the base of the head at the neck. Just below, you should be able to feel the spinous process of the C2 vertebra. Palpate carefully along the cervical vertebrae and count down to C7. The next vertebra below C7 is T1, the first thoracic vertebra. See if you notice any difference in the feeling of the spinous processes of the thoracic vertebrae compared to the cervical vertebrae. Count down through the remaining 11 thoracic vertebrae, noticing their shapes, and the spaces between each vertebra and its processes, as you go. At T12, move your fingers gently and slowly horizontally to either side and try to locate and palpate the 12th rib. If you're on this rib, you might be able to move laterally from 3 to 6 inches and locate its "floating" end if it's not too deep in the muscles or other tissue of the region. Immediately below the 12th thoracic vertebra, you should be able to locate the first lumbar vertebra. The lumbar vertebrae are larger and the processes usually project more noticeably than the vertebrae above. When you've located the first lumbar vertebra, count down to L5, which should feel large and knobby. Move your fingers laterally to either side of L5 and see if the iliac crest of the ilium is approximately even with L5.	Figures 13-1, 13-2, 13-3, 13-4

Practical Checklist—Torso, Front and Back			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
_____ _____ _____ _____ _____ _____	**Sternum** ▸ jugular notch ▸ manubrium ▸ body ▸ xyphoid process **Ribs 2 through 7**	For this step, you will be reviewing the palpation of the sternum you did in Lesson 7. But this time, you will be focusing on the sternum in relationship to the ribs. Remember—this is a very sensitive area for some people, so be gentle and check in with your client frequently. With your client lying supine, arms relaxed at the sides of the body, place your fingers at the center of the chest, just below the throat. Feel the jugular notch at the upper end of the bone. Explore the manubrium and body of the sternum. Move your fingers down to just below the sternum, then go back up to the lowest tip and explore the xyphoid process. In some people, this process projects dorsally, so if you don't easily find it, don't try too hard. Now go back to the jugular notch and identify the clavicle on either side. Then, slowly and gently, move your fingers down either side of the sternum and try to identify where ribs 2 through 7 attach to the sternum. The seventh rib and its cartilaginous tissue curve downward and laterally around the thoracic region above the abdominal area. Remember that the first rib is "buried" under the clavicle in this area, so you won't be able to palpate it. You should be able to feel the ridges of the ribs, and the indentations between them, in this region close to the sternum.	Figures 7-12, 13-5
_____ _____	**Ribs** ▸ intercostal muscles	With client lying supine as for the previous step, continue to gently palpate the ribs in the region below the breast area. Follow the curve of the accessible ribs around to the side of the body, noticing how the spaces vary between the ribs, and within the different regions between the same ribs. Referring to the diagrams in this lesson, see how many of the ribs you can identify by number. Remember that the 11th and 12th ribs are accessible primarily from the back. As you explore the ribcage, also gently palpate the intercostal muscles between the ribs.	Figures 13-5, 13-17
_____ _____	**Muscles of the Back** ▸ trapezius (traps)	For this step, you'll begin with locating the upper traps, as you did in Lesson 11. With your client prone, stand at the top of the table above the client's head. Gently take hold of the band of muscle fibers that lie across the client's shoulders in this position. These are the fibers of the upper traps. Follow these fibers upward toward the base of the head at the occiput, and downward to where they insert in the lateral clavicle. Next, follow the fibers of the middle and lower traps from the lateral clavicle across and downward; try to identify where the traps end at the spinous process of the T12 vertebra.	Figure 13-7

Practical Checklist—Torso, Front and Back			
Completed (✔)	**Bone/Landmark/ Joint/Muscle**	**Locating/Palpating Instructions**	**Figure Reference**
_____	**Serratus Anterior**	Again, have your client lie supine, arms at his side. Stand at the side of the table on the opposite side from which you will be palpating the client's body. Remember that the serratus anterior muscle spans a ticklish area of the body, so check in with your client as you locate and palpate this muscle, and use a slow, firm but not deep pressure. Move the client's arm (on the opposite side of the body from where you're standing) slightly away from his body and locate the pec major muscle and the anterior border of the lats. Place your flattened fingers along the side of the ribs between these two muscles. To help you identify the serratus anterior muscle, have your client raise his straightened arm so his hand is toward the ceiling. With your hand on the region of the serratus anterior, have him alternately reach toward the ceiling, then relax. You should feel the fibers of the serratus anterior alternately contract and soften as he does so.	Figures 7-15, 7-16, 7-25, 13-18

🕮 Step 17 Lesson Summary

- ❑ The torso, or trunk, of the body covers quite a bit of territory, both on the outside and in terms of what's underneath it all. Just as in the other regions of the body, the bones of the spinal column and ribs and all the muscles and connective tissue are uniquely designed to provide just the right kind of support, protection, movement, and general well-being that the human torso needs. What you've learned about the torso is only a small part of what you can learn later, when you want or need more details.

  You probably remember reading in an earlier lesson that as a massage therapist you wouldn't need to know all the terminology that medical doctors must know. Well, that's still true. But, by now, you should be feeling really good about how much important information and understanding you already have learned for your career as a massage therapist. And, hopefully, you're beginning to feel little periods of excitement as you realize how much closer you're moving toward that goal.

  You've accomplished a lot by this point in the course, and more interesting avenues and byways are waiting for you before you are done. So give yourself some well-deserved credit for reaching this stage of the journey. And when you complete the Mail-in Quiz for this lesson, you'll be ready to relax a little before you start out on the next leg (well, maybe not quite to the leg yet, but you're getting closer) of the tour through the human anatomy.

✉ Step 18 Mail-in Quiz 13

- ❑ Follow the steps to complete the quiz.

  a. Be sure you've mastered the instruction and the Practice Exercises that this quiz covers.

  b. Mark your answers on your quiz. Remember to check your answers with the lesson content.

  c. When you've finished, transfer your answers to the Answer Sheet. Use only blue or black ink.

  d. **Important!** Please fill in all information requested on your Answer Sheet or when submitting your quiz via e-mail.

  e. Submit your quiz to the school via mail, e-mail or fax.

Mail-in Quiz 13

For items 1 through 15, choose the best single answer to complete each sentence.

1. The _____ forms the supporting structure for the heart, lungs and other important organs.

a. ribcage
b. diaphragm
c. abdominals
d. spinal vertebrae

2. A naturally curved spine has _____ primary curves.

a. three
b. two
c. four
d. five

3. The bony thorax includes _____.

a. the spinal column and the ribcage
b. the sternum, the ribs and the thoracic vertebrae
c. the cervical vertebrae and the ribs
d. the spinal column, the ribcage and the abdominal muscles

4. The ribs are connected to the sternum by _____.

a. intercostal spaces
b. floating joints
c. condyloid joints
d. costal cartilage

5. The ribs that are called "floating ribs" are _____.

a. the first three ribs
b. the 11th and 12th ribs
c. the 8th, 9th and 10th ribs
d. the middle three ribs

6. The point at which the anterior portions of the pubic bones articulate with each other is called the _____.

a. linea alba
b. pubic crest
c. pubis
d. abdominal fascia

7. The flat band of tendon that stretches from the low back to the upper ridge of the ilium to the lower thoracic vertebrae is called the _____.

a. thoracolumbar fascia
b. abdominal fascia
c. lumbar tendon
d. nuchal ligament

8. The _____ muscles are sometimes considered an extension of the lower obliques.

a. transversus abdominalis
b. erector spinae
c. intercostal
d. serratus anterior

9. The _____ muscles originate from the spinous processes of the C7 through T5 vertebrae and insert all along the medial border of the scapula.

a. trapezius
b. erector spinae
c. transversospinalis
d. rhomboid

10. The _____ muscles help maintain erect posture, extend the vertebral column and laterally flex the vertebral column to the same side.

a. latissimus dorsi
b. transversospinalis
c. erector spinae
d. quadratus lumborum (QL)

11. The _____ muscle is often referred to as the "hip-hiker" muscle.

a. quadratus lumborum (QL)
b. latissimus dorsi
c. transversospinalis
d. external oblique

12. The fascial tissue called the linea alba is located _____.

a. vertically up the middle of the back
b. deep in the QL muscle
c. horizontally across the rectus abdominis muscles
d. vertically up the middle of the abdomen

13. When both the internal and external obliques on the same side contract, the resulting movement is _____.

a. lateral flexion to that side
b. lateral flexion to the other side
c. extension on that side
d. the internal and external obliques cannot contract on the same side at the same time

14. The primary movement of the _____ muscle(s) is to flex the vertebral column.

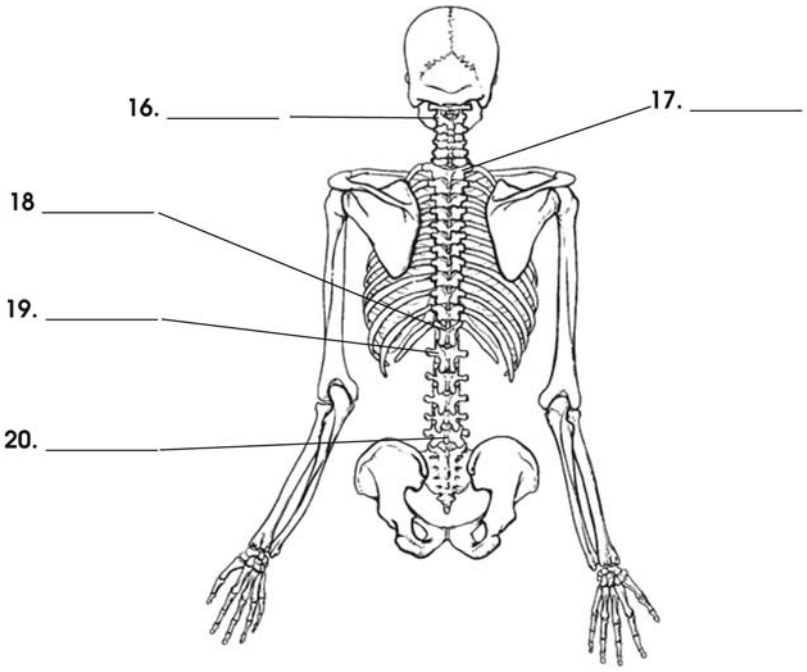
a. intercostals
b. quadratus lumborum (QL)
c. rectus abdominis
d. latissimus dorsi

15. It's particularly important to know whether your client is ticklish if you're going to be palpating in the region of the _____ muscle.

a. rhomboids
b. trapezius
c. serratus anterior
d. quadratus lumborum (QL)

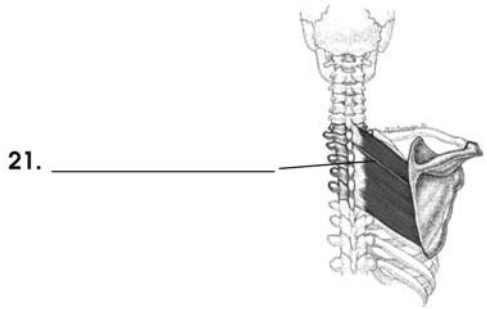
For items 16 through 20, select the term from the list to label the diagram. Not all terms will be used.

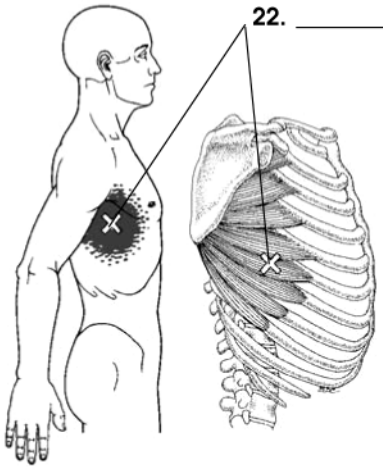
T1	T12	C2	L5
L1	C7	C1	rib 12

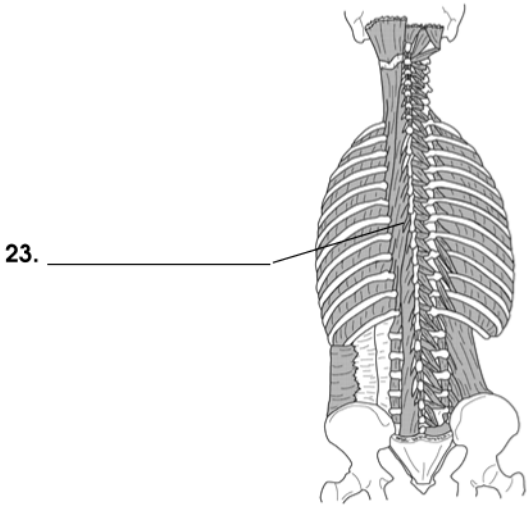


For items 21 through 25, select the term from the list to label each diagram. Not all terms will be used.

transversus abdominis	linea alba	transversospinalis
quadratus lumborum	rhomboids	serratus anterior
rectus abdominis		




22.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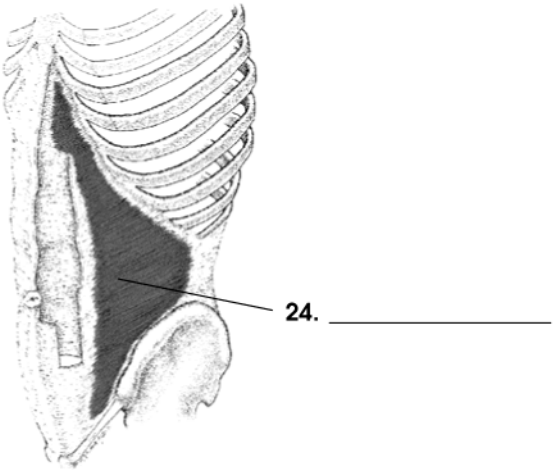
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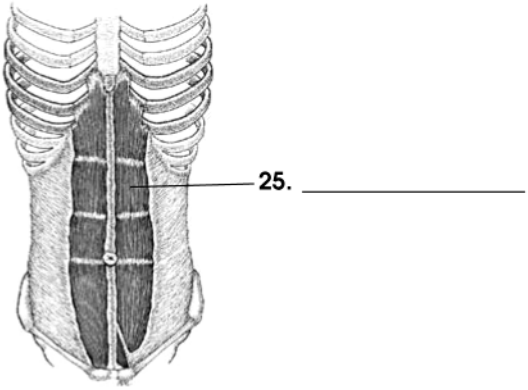

25.

Massage Therapy
Mail-in Quiz 13

1. Fill in your **student ID** and your **course code** below.

STUDENT ID NUMBER _____ COURSE CODE _____

2. Be sure your **name** and **address** are filled in below.
3. **Transfer your answers** to this cover sheet.

For School Use Only:
Grade: _____

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

U.S. Career Institute
2001 Lowe Street
Fort Collins, CO 80525

MS-02

This Space for Instructor Use

Fold on dotted line

Transfer your answers from the quiz pages to this Answer Sheet.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25 _____

Congratulations—

You have completed Lesson 13,

Movement and Support IV—
The Torso: Front and Back

Do not wait to receive the results of your quiz before you move on.

Lesson 14
Theory of Traditional Chinese Medicine

Step 1 Learning Objectives

- ❑ After completing this lesson, will be trained to do the following:
  - Discuss the focus of traditional Chinese medicine.
  - Explain chi, its types, and its importance in TCM theory.
  - Understand the concept of yin and yang.
  - Explain the five-element theory and apply it to people you know.
  - Discuss how Shiatsu and acupressure are used.
  - Understand the importance of herbs and dietary therapy in TCM practice.

Step 2 Lesson Preview

- ❑ For the last couple of lessons, you've been immersed in Western scientific knowledge. Are you ready for a break from that? Are you up "to here" with anatomy—with naming parts and learning precise movements of muscles?

  In this lesson, you'll be turning in a different direction: east! You'll explore some of the concepts of Eastern medical ideas. You won't be memorizing scientific knowledge (except that, of course, you'll continue looking over your anatomy flashcards each evening). Instead, you'll be getting acquainted with the intuitive-based framework of traditional Chinese medicine. (Because "traditional Chinese medicine" is such a mouthful to say, it will most often be referred to by its nickname and initials: TCM.)

In this lesson, you will learn about the philosophy and practice of traditional Chinese medicine, which emphasizes health as balance and illness as imbalance.

Are you ready for a trip across the world? Relax and open your mind. Let's go!

🕮 Step 3 To the East: A Road Well Traveled

- ❑ Traditional Chinese Medicine has been around for about 5,000 years. Recently, Western studies indicate that TCM can effectively treat a variety of diseases. But *why* it works still hasn't been figured out in a Western laboratory. With TCM, results speak for themselves, but we may not ever find out *why* those results come about—at least we may never know according to the Western model of thought.

  Traditional Western thought and Western medicine focus on the questions of *what*, *where*, *why*, and *how* the human body functions. Asking such questions and looking for the answers has led to the development of an impressive array of knowledge—one example is anatomy, and by now you realize how much is involved with that! Western surgeons must not only learn everything you're learning about the muscles—they must also know the precise location of all the nerves and blood vessels. Western science has identified parts of the body from molecules to cells to tissues to organs to systems. And before something is considered true according to Western thought, scientific procedure must be observed; there must be measurable proof.

  Traditional Eastern thought, however, has a different focus. TCM is concerned with the way everything connects and how each person fits in to the flow of life. TCM seeks to balance and enhance the life force within people, thereby creating health. As you study TCM, provable facts can take a back seat and intuition can be the driver.

  TCM is the foundation of acupuncture and traditional Chinese herbs. It's also the basis for acupressure and Shiatsu massage, which we'll discuss a little later in this lesson.

🕮 Step 4 Opposites Attract—Yin and Yang

- ❑ Western thought often pits opposites against one another, but Eastern thought groups opposites in relation to one another. Most of us have become at least a little familiar with the yin/yang symbol pictured below.

  In TCM, all things are designated as either **yin** or **yang**, the two forces that balance each other. This yin and yang concept is central to TCM.

The yin/yang symbol

Aspects of the Yin and Yang

1. Yin and yang are opposite, but not antagonist to each other.
2. Yin and yang are interdependent.
3. Yin and yang consume each other.
4. Yin and yang transform each other.

For example, in the matter of luminosity, light is yang, and dark is yin. Too bright would be considered excess yang, and pitch dark would be considered excess yin: Mixing the two produces a pleasant luminosity that doesn't strain the senses—a little more yang during the day is appropriate, and a little more yin during the night.

Another example is found in temperature: Heat is yang; cold is yin. Once again, extremes of either are difficult and unhealthy. However, mixing them produces a pleasant balance, like mixing the taps for water in a bathtub. To be active is considered yang; to be passive is yin. Too much activity leads to burning out, and too much passivity can lead to other problems. TCM advocates balancing activity with rest. Yang is hard; yin is soft. Yang is closed; yin is open. Sky and sun are yang; earth and water are yin.

In every yin/yang pair, more of one is less of another, and the idea is to balance them appropriately. Even foods are assigned to yin and yang categories. Salt is yang; pepper is yin. Meat is yang; fruit is yin. The study of yin/yang foods is sometimes referred to as **macrobiotics.**

Step 5 The Life Force—Chi

- The idea most basic to TCM is that of **chi** (*chee*), which refers to that invisible, animating force of life. Chi, sometimes spelled "qi," can't be measured, but then neither can life. When a plant stops growing, withers and dries up, what has gone out of it? Life isn't a substance that registers on scientific instruments (not yet, anyway). In that sense, life is invisible. But in another sense, life is probably the most visible thing around. Everywhere you look, you see life. Seeds germinate, sprout, and grow. Animals run, jump and burrow. People dance, sing, create, compete, cook and do hundreds of other things.

Everywhere you look you see life; seeds germinate, sprout and grow.

The way the sun shines and the rain falls are examples of chi.

In TCM, the movement of the wind, the turning of the earth, and the way the sun shines and the rain falls are all examples of chi. And the lives of human beings are also thought to be animated by chi. According to TCM, when a person's chi is strong and harmonious, that person is healthy. When chi is weak or unbalanced, disease results.

You may know someone who feels tired all the time, finds it hard to get inspired about anything, and has a variety of aches and pains. Maybe that person went to the doctor, and after a series of blood tests, was told, "We can't find anything wrong." In such a case, all the body parts are functioning, but something is missing. TCM would say the chi is running low. The TCM idea of health goes farther than the idea of all body parts being in working order. Health, according to TCM, means that abundant chi fills the person, resulting in plenty of energy. It also means that the chi is balanced, resulting in a healthy state of mind as well as a healthy body.

In the human being, yin chi and yang chi can also go into either excess or deficiency. Acupuncturists train to create a situation within the body that will balance yin and yang elements of chi. This is done partly through needling points, partly through diet and/or exercise, and partly through herbal therapy.

Types of Chi

Western thought classifies everything in great detail. The ancient Chinese did a bit of classifying of their own. They named different types of chi:

- **Jing chi** refers to the life force inherited from parents. This chi is thought to be stored in the kidneys and drawn on throughout life. If you've ever spent time around a healthy baby, you know that babies are normally bursting with chi. A baby's eyes sparkle, her skin glows, her whole body moves to express delight and curiosity. Where does all that energy come from? According to TCM theory, it comes from jing chi.

- **Gu chi** is the chi that we derive from the foods we eat and the fluids we drink. Good nutrition and clean water help to replenish chi, and contribute to ongoing health. Consuming things like junk foods and soft drinks is thought to weaken chi.

Good nutrition helps to replenish chi.

- **Shen chi** comes to us from our relationships with friends and family. Warm, loving relationships add to our store of chi, strengthening and supporting us. Strained or conflict-ridden relationships drain our reserves of chi. Western studies have shown that good marriages and strong friendships play a role in health and longevity. Perhaps it's because the shen chi is favorable!

- **Da chi** comes to us from the air we breathe. Deep breathing and exercise in clean air increase da chi. Shallow breathing, smoking, or breathing polluted air decrease da chi, as does lack of exercise. TCM prescribes exercises such as *tai chi* (a martial art exercise for the mind and body), which encourage the development of da chi.

- **Wei chi** is the combination of all the other forms of chi. TCM believes that when balanced wei chi is flowing through us, we are healthy. If wei chi is low or out of balance, symptoms will begin to develop.

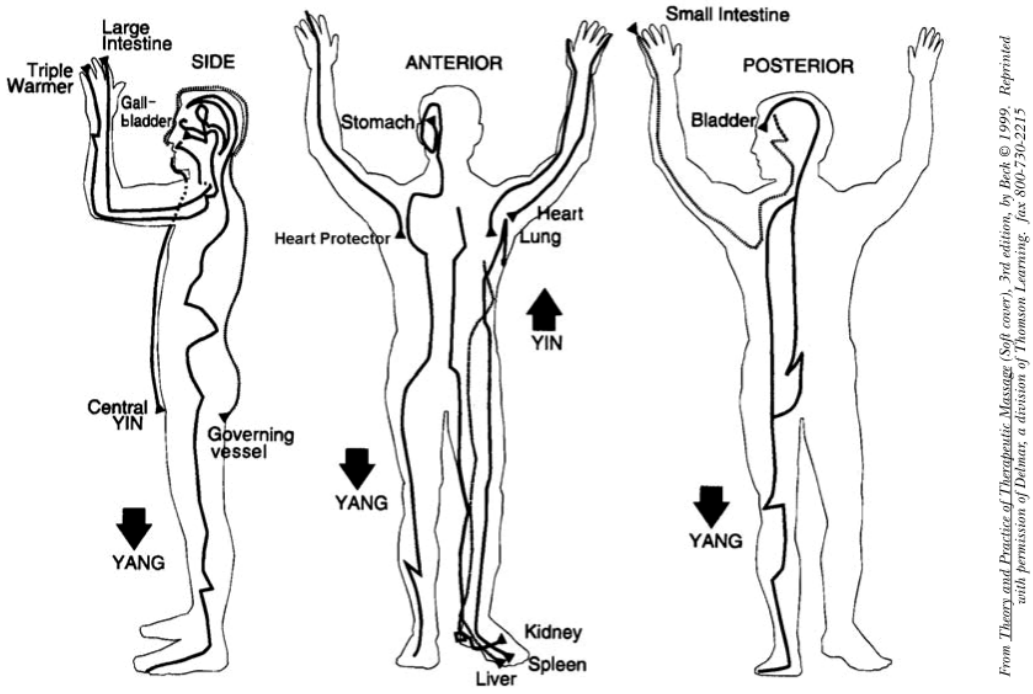
People who are often tired but have normal blood tests may have the beginnings of low chi. Often, chi can be restored by eating well, drinking clean water, developing good relationships and exercising.

Meridians—Avenues for Chi

TCM believes that chi normally flows through a series of channels called **meridians**. Each meridian has **points** along it. (If you've ever been to an acupuncturist and been "needled," the needles are put in points along your meridians that the acupuncturist has determined need specific treatment.)

There are twelve major meridians. Each is associated with an organ. Most of these organs will be familiar to you from Lessons 5 and 6: lungs, large intestine, heart, small intestine, spleen, stomach, kidneys, urinary bladder, liver and gallbladder. Two of the "organs" TCM refers to are concepts more than actual, physical organs: the *triple warmer* and the *heart protector*. Because these two concepts don't have a parallel in Western thought, they are sometimes known by other names. The **triple warmer** is sometimes called *triple burner* or *triple heater*, and it governs the circulation of chi through the upper, middle and lower portions of the torso. In Western terms it has been associated with glandular function. The **heart protector** has also been called *heart governor* and *pericardium*, among other names. It is thought to screen the emotional heart from depressing or delusionary ideas.

Take a look at this diagram to get an idea of where the meridians are in the body.



Twelve organ meridians

Interestingly, these meridians *do* register on Western electromagnetic instruments. Below is a chart of the meridians.

Organ Meridian	Yin or Yang	Location
Lung	Yin	Chest to end of thumb
Large intestine	Yang	Index finger to face
Stomach	Yang	Face to front of body to end of second toe
Spleen	Yin	Middle side of large toe to inside of leg to chest
Heart	Yin	Chest to inside of arm to end of little finger
Small intestine	Yang	Small finger to back of arm to side of face
Bladder	Yang	Medial side of eye, over the head and down the back and back of leg to little toe
Kidney	Yin	Bottom of foot and along inside of leg to upper chest
Pericardium	Yin	Chest to end of middle finger
Triple warmer	Yang	End of ring finger back to side of head
Gallbladder	Yang	Side of head and body along side of leg to the fourth toe
Liver	Yin	Big toe and along inside of leg to chest

This chart is as common in the offices of acupuncturists as a muscle chart is in the offices of massage therapists.

According to TCM, when balanced chi is flowing through all the meridians, a person will enjoy health, energy and well-being.

Blocked or Excess Chi

Sometimes the flow of chi can become clogged or blocked at various points along a meridian or group of meridians. When that happens, chi isn't distributed evenly along the meridian: Parts of the meridian may have too much stimulation from chi (which brings about *excess* in an area), and other parts may have hardly any chi (which brings about *deficiency* in an area). In TCM, many health problems are thought to be the result of excesses, deficiencies or both.

As a medical system, acupuncture treats health problems by addressing the flow of chi. When a doctor of acupuncture sticks needles into a patient, the needles are placed on meridian points that the doctor has determined need to be either stimulated (opened up) or sedated (quieted down). Doctors of acupuncture study for years to become familiar with the meridians, the meridian points, and the way diseases relate to excesses and deficiencies of chi along different meridians.

✍ Step 6 Practice Exercise 14-1

❑ Using words from the following list, fill in the blanks in the sentences below. Not all terms will be used.

jing chi	enhance	interdependent	excess
da chi	balance	transform	meridians
deficiency	chi	points	gu chi
shen chi	wei chi		

1. **TCM seeks to _____ and _____ the life force present within people.**
2. **_____ is the invisible, animating force of life.**
3. **Favorable _____ results from having good relationships with friends and family.**
4. **_____ is the life force we inherit from our parents.**
5. **Shallow breathing or smoking results in decreased _____.**
6. **The combination of all forms of chi is _____.**
7. **We get _____ from what we eat and drink.**

8. **Chi flows through channels called _____.**

9. **If parts of those channels have too much chi stimulation, a(n) _____ of chi results.**

10. **Yin and yang are opposite to each other; they consume and _____ each other, and they are _____.**

Step 7 Review Practice Exercise 14-1

- ❑ Compare your answers to Practice Exercise 14-1 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

Step 8 The Five-Element Theory

- ❑ Another important component in traditional Chinese medicine theory is the five-element theory. The five elements are wood, fire, earth, metal, and water. Each element is related to a set of organs, a set of meridians, and a set of personality traits. A prominent branch of TCM believes that every person "belongs" to a particular elemental "family," even though we each have all five elements operating within us. Depending on which element you belong to, you will naturally express certain personality traits more than others. The five elements can be an interesting way to regard yourself and your friends.

The five elements are wood, fire, earth, metal, and water.

Let's take a closer look at each element to get a clearer sense of the five-element view. Do you recognize yourself or any of your friends and family in these descriptions?

Wood Element

Think of a seedling breaking through a crack in the cement, then growing up to spread leaves and branches and growing down to send roots deep in the earth. Wood has an unstoppable quality to it, just like that seedling bursting through the cement crack.

Wood

Members of the wood family are strong people who like to "branch out." They usually have such good constitutions that they can "get away with" things other people can't—such as partying too hard, then exerting themselves too much, then getting very little sleep. A "wood person" can fill a room with a forceful presence. These people love a good competition and are frequently big sports fans or sports participants. They tend to shout at the TV when they're watching a game; in fact, they tend to get loud whatever they do, even if they're just having a conversation. The sheer energy of the wood element is contagious. Unafraid of decisions, their motto could be "Have at it!" Wood people need to be active; they're movers and shakers, builders, and pioneers. A wood person would much rather issue commands than receive orders.

A "wood person" loves competition.

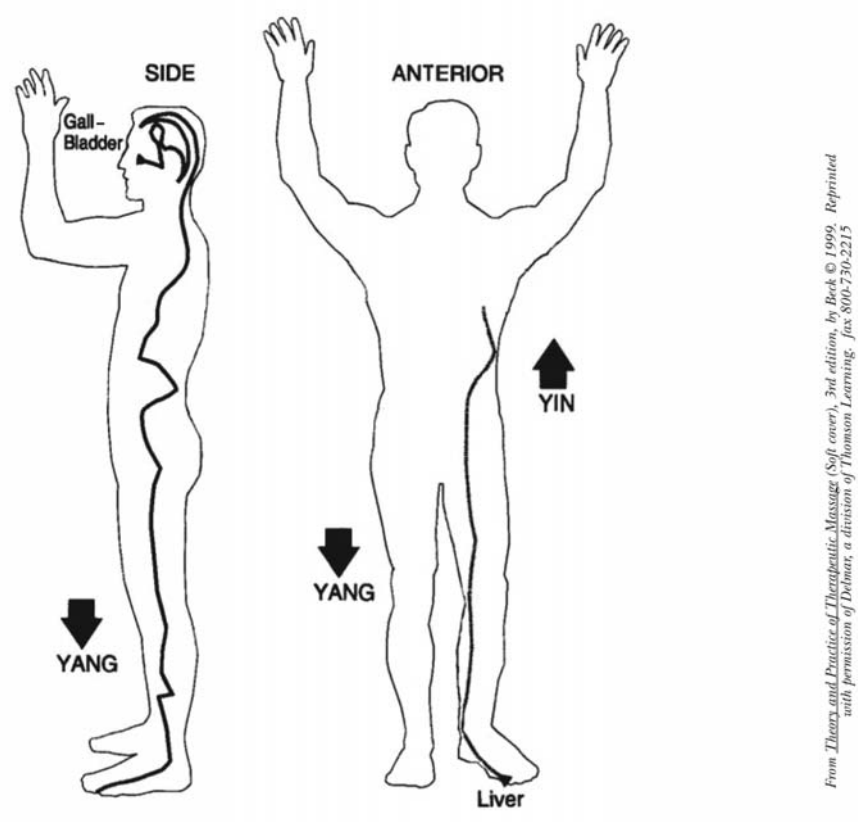
They love to create, especially things that are tangible. They also form strong "roots"—their friends, families and communities are quite important to them.

Anger is the emotion associated with wood; anger can get out of hand when the wood element is in excess. When the wood element goes into excess, a person may become pushy and intimidating. He can be insensitive without even realizing it. When branching into a new project, excess wood can make a person be both rash and stubborn! (Ever tried to pick up a tree and move it? A wood person can plant his feet just as firmly. And when wood is in excess, he doesn't think things through before going out on a limb.) If something goes wrong, he blames the other guy.

Wood deficiency results when a member of the wood family, always prone to overdoing, gets into the habit of the "party hearty" mode too often. Or perhaps he piles his plate with way too much, literally and figuratively. Or maybe he becomes cut off from his roots. Even this strong individual can deplete his chi that way. Deficiency of wood leaves a person feeling drained, depressed, and/or stuck in a rut. He may begin to rely heavily on substances such as caffeine and alcohol to get through the day.

The color associated with the wood element is green. The sense organ is the eye. The organs ruled by wood are the liver and gallbladder. The liver is said to be the yin organ for wood; the gallbladder the yang.

The liver and the gallbladder each have their own meridians, pictured on the next page.



Liver and gallbladder

Fire Element

Think of a match bursting into flame, lighting a candle's wick to give out a soft glow. Think of campfire and the way the flames flare up, die down, send out bursts of sparks, create heat, and "feed" on wood. And imagine a forest fire, consuming thousands of acres, burning out of control.

Fire

Fire has a fascinating, dramatic quality to it, and so do members of the fire family. Full of zest and enthusiasm, fire types brighten and warm any gathering. These passionate people can often be identified by their laughter, which comes easily to them. They are social, affectionate people, always "up to something." They enjoy surprising others and being surprised. Their motto could be "Let's have fun!" They love to be here, there, and everywhere. They don't do well with tedium, and if they're in a boring situation, they will either fidget for a while then leave, or they'll find a way to liven things up. Joyful and bubbly, fire types are habitually upbeat and optimistic. Love and intimacy are high on their priority lists. Fire people are given to making intuitive "leaps"—just as a fire will leap from one log to another. Always tuned in to positive possibilities, fire knows no limits but the sky.

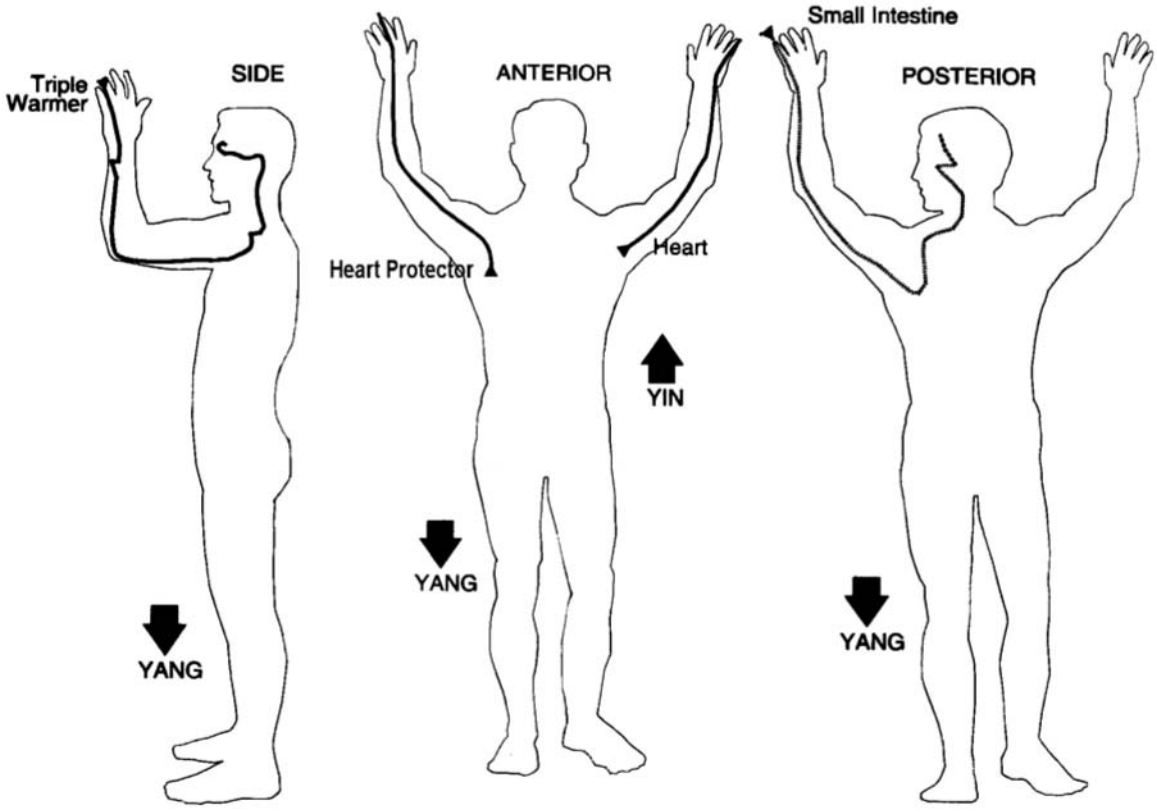
"Fire people" love social gatherings. They are full of zest and enthusiasm.

When the fire element goes into excess, a person becomes overly dramatic, riding an emotional roller-coaster. The typical "drama queen" is an example of excess fire energy. What's up goes down; what's down goes up. The fire person rushes in all directions without getting anywhere. One minute she's chattering and giggling, the next minute becoming overexcited, or pursuing very grandiose, very impractical ideas. Being "in love with love" may propel her from one relationship to another. Burning the proverbial candle at both ends, excess fire leads to a frazzled way of being. *Hysteria*, the emotion associated with fire, sets in, producing an out-of-control frenzy.

Fire deficiency can result when a person uses up her chi with too many wild ups and downs, too many bad relationships, too much rushing around. Irrational, even delusional, thinking takes over. Fire deficiency leaves a person feeling jittery, anxious, hopeless and just plain tired out. The common phrase, "I've lost my fire," means inspiration and energy are gone.

The color associated with fire is red. The sense is taste. The organs ruled by fire are the heart and small intestine, the triple warmer and the heart protector. The heart and heart protector are yin organs; the small intestine and triple warmer are yang.

Each fire organ has its own meridian, pictured below.



The triple warmer, heart protector, heart and the small intestine

Earth Element

Think of a lush garden nourished by fertile soil, or a field of golden wheat, or an orchard filled with ripe fruit, and you'll get a sense of the earth element. Just stopping to think about a garden can often help people feel more peaceful, and the earth element embodies that same peaceful, harmonious quality.

Earth

Members of the earth family care about others; they are comforting and nurturing.

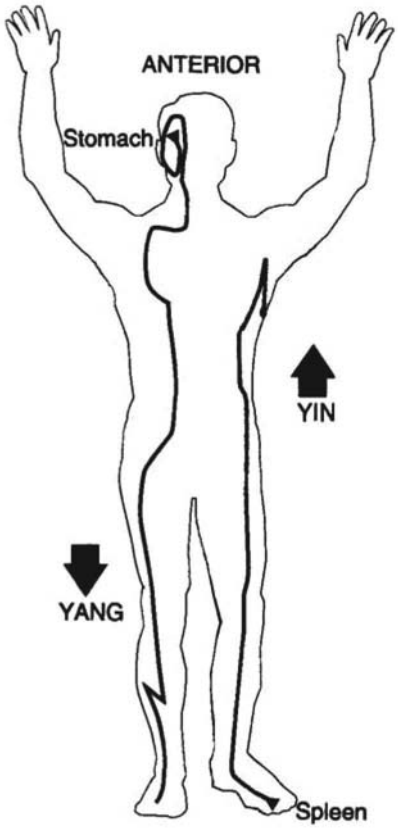
Members of the earth family are comforting, nurturing people who care about others. The kind, accepting friend who listens sympathetically; the hospitable host making sure all her guests are offered seconds; the down-to-earth nurse who tends to an illness with patience—all these are examples of earth. Earth people often have pleasant, warm voices and faces. They are the ones we feel comfortable telling our troubles to and the ones who make us feel things will be "all right." They keep up with their friends and families and volunteer time to those less fortunate than themselves. In the presence of healthy earth people, others become calmer and more "centered."

When the earth element goes into excess, a person becomes smothering. Instead of truly considering others, earth in excess knows "what you need." Concern turns to meddling. *Worry* is the emotion associated with earth, and when earth is excessive, peace gives way to endless worries. Unable to say "no," the earth person becomes overextended. If criticized, he is hypersensitive and easily wounded.

When earth is deficient, a muddy quality enters in. The person deficient in earth becomes absentminded and tremendously scattered. He still wants to be around people, but now begins burdening others. His judgment becomes so poor that he often can't even care for himself and can't get his act together. Instead of being peaceful and helpful, he is possessive and needy, full of "sob stories." Descending into self-pity, he loses all self-discipline and may be described as "flaky."

The color associated with the earth element is yellow. The sense is touch. The organs it rules are the stomach and spleen. The spleen is said to be the yin organ for earth; the stomach the yang.

The spleen and stomach each have their own meridians, pictured below.



Stomach and spleen

Metal Element

Metal

Members of the metal family are adaptable people who have a flair for organization.

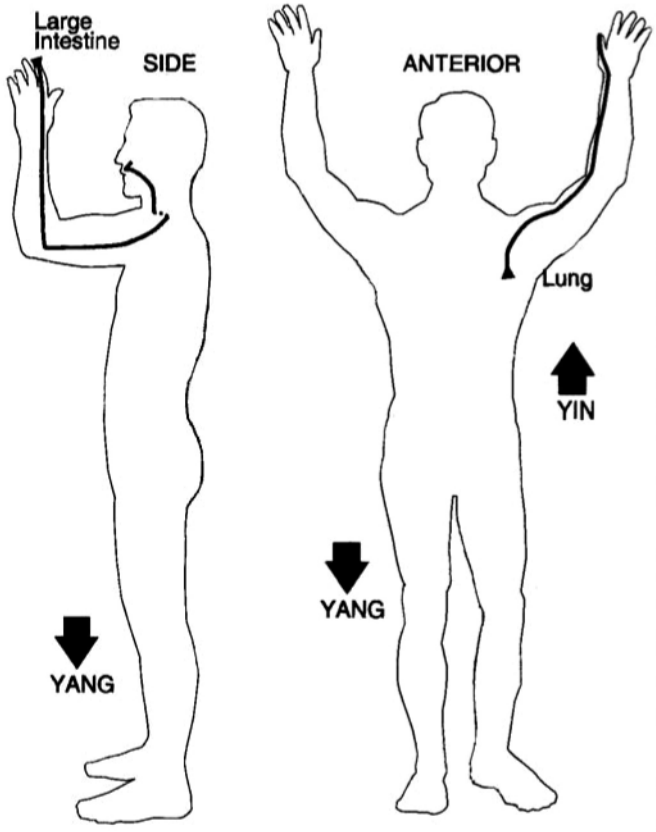
Think of the rocks of a riverbed or a trove of crystallized gemstones. Think of the minerals dissolved in your bloodstream, the cables running along phone lines, or a statue made of gold. Then think of a sword, a dagger or a kitchen knife. Metal is part of all these diverse things, and metal can take many forms. Metal can be molded, it can be hard and sharp, it can be melted, and it can also dissolve.

Members of the metal family are often able to do lots of different things and would never consider being sloppy in their work. Integrity is their hallmark. These adaptable people also have a flair for organization. Think of the metal strings on a piano; imagine the piano tuner carefully listening to the pitch of each string. This will give you an idea of the conscientious, thorough approach of a metal person. Being precise, like a scalpel, is another key metal trait. Metal family people don't like "fudging" or cutting corners. They also respond strongly to beauty and art and frequently involve themselves in cultural events.

They look for the inner meaning. They often feel reverence for nature and are drawn to philosophical and spiritual ideals to guide their principles. They are also sensitive to subtleties and have good powers of concentration. Like the lungs, which are part of the metal system, metal people know when to let go and when to hold on. They enjoy solitude and are naturally moderate.

When metal goes into excess, a person's affinity for organization becomes imposed order. Everything has a place, and the metal person can be strict and critical. At the same time, *grief,* the emotion associated with metal, starts to take over the person. She will ponder her losses, both real and imagined. She becomes over-responsible, too, doing far more than her share of work, turning into a "workaholic." In the view of one with excess metal, anyone who takes time off to have fun is a slacker. No chit-chat allowed! She loses the ability to soften and adapt and instead tries to exert more control over her surroundings. Conscientiousness becomes perfectionism down to the last detail. While a person with healthy metal is naturally somewhat reserved, one with excess metal is just uptight. She becomes ultraserious until she is, in effect, no fun at all.

The person deficient in metal becomes fragile, like a shattered gemstone or delicate wire. This can be the result of a significant betrayal or some deep injustice. There is a breakdown in the sense of meaning. The metal person grows sad and mournful, prone to falling sick easily. Feeling overwhelmed, she is likely to avoid people. Isolated and lonely, she lacks resolve and loses her appetite—not only for food, but for life.



Large intestine and lungs

The color associated with metal is white. The sense is smell. The organs ruled by metal are the lungs and large intestine. The lungs are yin; the large intestine yang.

Each metal organ has its own meridian, pictured on the previous page.

Water Element

Water

Members of the water family have the willpower to overcome obstacles.

Think of a quiet lake, a gentle rain, a wide river. Then think of a fast-moving stream, a roaring waterfall or a big wave. Imagine a rip tide, a flood or a hurricane. All of these are examples of water.

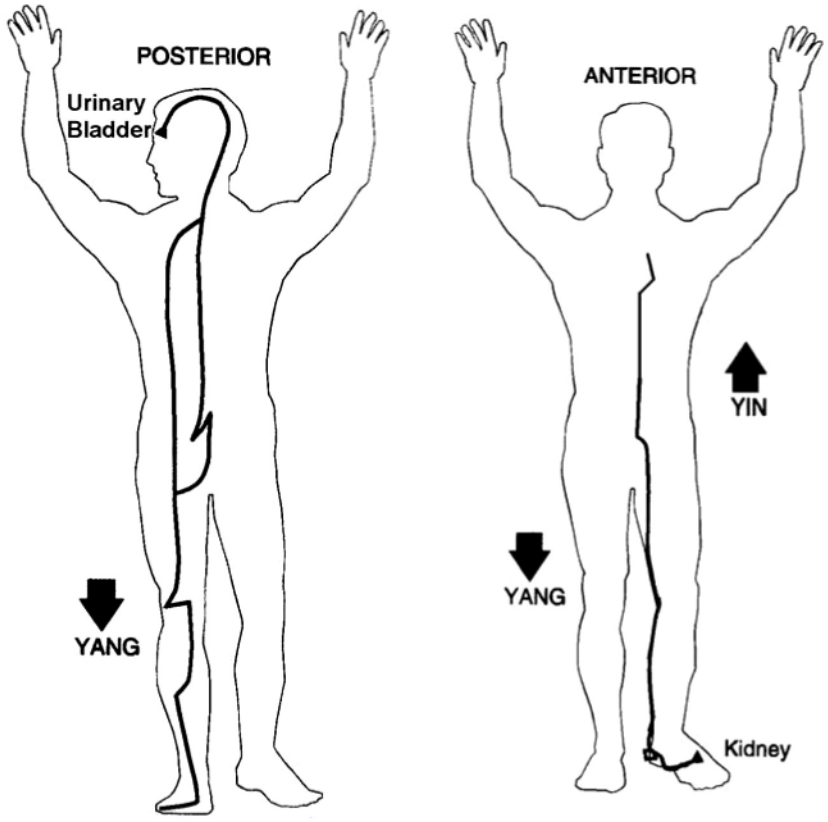
Like the element they are said to belong to, water people are changeable. Even healthy water types have many moods—some calm and introspective, some stormy and intense. Water people like to figure things out, to study the whys and wherefores. As they learn, they enjoy connecting one idea to another. They are good at in-depth analysis and want to know "what's really going on." Also imaginative, they are alert to potentialities. Setting goals and getting there is very satisfying to water people, who have the willpower to overcome any obstacle. Water is also naturally reflective and enjoys retreating from the world for a while to contemplate the deeper questions of life.

When water goes into excess, a person can freeze on a position, becoming inflexibly opinionated. Instead of exploring truth (the way a healthy water person will), an excess water person is prone to becoming quite full of himself. Imagine telling a forceful waterfall to try a different direction! A person with excess water can become just as dedicated to following his chosen course, even if that course is destructive. Why listen to anyone else? At this point, the water person is deeply suspicious of others. *Fear*, the emotion associated with this element, is acting upon his mind. The "wet blanket" phenomenon may also occur: The excess water person can dampen the spirits of those he interacts with, spreading pessimism. A person with excess water is likely, in some of his worst moods, to become just plain mean.

When water is deficient, there is loss of energy and loss of direction. A person with deficient water may constantly complain, feeling ill-used for no particular reason. A sort of emotional paralysis sets in, along with stagnation.

The color associated with water is black. The sense is hearing. The organs ruled by water are the kidneys and urinary bladder. The kidneys are yin; the bladder yang.

Each water organ has its own meridian, pictured below.



Urinary bladder and kidneys

Interaction of the Five Elements

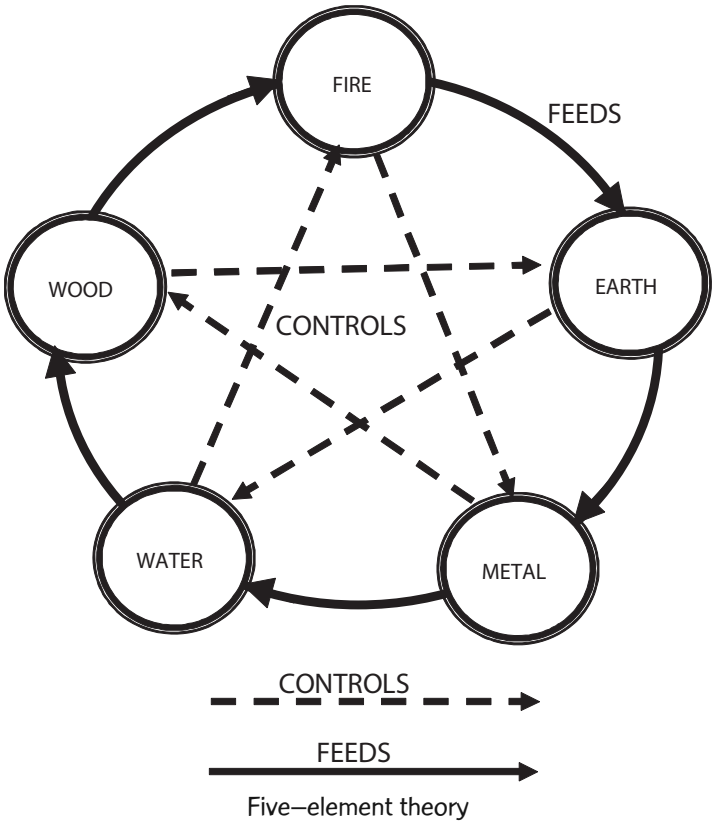
Each of the five elements is fed by one of the others. For example, wood feeds fire. Each element is also controlled by another element. For example, metal chops wood.

You can see the relationships of the five elements in the picture on the following page.

Follow the elements around the circle. Notice that water feeds wood. It may be helpful to think of a tree needing water to grow. Wood feeds fire—fire needs wood to burn. Fire feeds earth with its ashes. Then earth feeds metal. Metal feeds water—a little more difficult to see logically, but think of the way water is always interacting with the rocks it touches.

Metal controls wood (by chopping it). Wood controls earth (by displacing it with roots). Earth controls water (by damming it up). Water controls fire (by quenching it). Fire controls metal (by melting it).

If chi is strong throughout one's system, and all the elements are functioning together in harmony, there are no deficiencies and no excesses. A deficiency would occur when an element is not "fed"—for example, if the wood element in an individual is low, it can't feed the fire element. Or if there are blockages along the wood meridian, there would also be deficiencies at the points the chi can't get to. Excess occurs when the controlling element doesn't do its job—for example, if the metal element in an individual is low, it can't control the wood element, which would then go into excess. Also, if there are blockages along the wood meridian, there will be points where the wood energy backs up and becomes excessive.



Element	Color	Sense	Organs
wood	green	eye	liver, gallbladder
fire	red	taste	heart, heart protector, small intestine, triple warmer
earth	yellow	touch	spleen, stomach
metal	white	smell	lungs, large intestine
water	black	hearing	kidneys, urinary bladder

Step 9 Putting the Fundamentals Together

- Now that you've read over the descriptions of the fundamentals of TCM, what do you think? Do you have a sense of what is meant by "chi"? Can you picture someone you know who you would describe as having very healthy chi?

  Do you identify with any of the elemental "families"? Do you feel like a mix of several? Do you know people who seem to typify the qualities described?

  TCM forms the basis of acupressure and Shiatsu, subjects we're going to say a little more about. Keep in mind, though, that this lesson is only meant to introduce the topic of TCM—it is not meant to be a comprehensive text. We hope it provides a balance for all that anatomical knowledge you're learning!

Step 10 Shiatsu—Based on TCM Fundamentals

- **Shiatsu** is a Japanese massage technique that embodies and applies many of the ideas of traditional Chinese medicine. The word *Shiatsu* means *pressure of the fingers or dig*its in Japanese. It is like acupuncture without needles, and it recognizes strategic points (called *tsubo*) on the channels that are similar to the acupoints of Chinese medicine but do not correspond entirely. The Shiatsu expert uses the ball of the thumb or parts of the hand to apply pressure at points all over the body. He also extends and moves limbs while applying pressure. The approach works with meridians and restores harmony.

  The Shiatsu therapist applies pressure to points so that the natural recuperative powers of the body are generated, toxins dispersed, muscles relaxed, circulation of blood and lymph improved, and energy released or balanced. The technique revitalizes the entire body. Shiatsu also soothes the nervous system and can be particularly effective in relieving headache, fatigue, insomnia, nervous tension, sore and stiff muscles, and constipation, as well as high blood pressure.

  A Shiatsu practitioner must build strength and dexterity in the entire hand to be effective. She may do exercises such as tai chi and learn to work with her own chi to help her better assist her clients.

Step 11 Acupressure—A Lighter Form of Acupuncture

- Pressing the area of the hand between the thumb and first finger is a simple technique to relieve headaches that is often passed on between coworkers or friends. This action is called **acupressure** and involves using thumbs or fingers to apply pressure to acupoints. Pressure by the fingers on a point has a milder effect than using an acupuncture needle. Pressure is applied for a few seconds, then released, and then often applied again in the same place. Deep pressure may be used on large muscles, while less muscular areas require less depth.

Next time you've had a long day and your eyes are tired, try this acupressure technique to soothe and relax your eyes:

Five-minute Massage for Tired Eyes

1. With your thumbs at the inner corners of your eyes, rest your fingers on your forehead. Lightly massage in a circular motion towards the nose with the thumbs.
2. Place thumb on one side of the bridge of the nose and the first finger on the other. Lightly massage in a circular motion, concentrating on pulling downward.
3. Place first finger lightly on either side of the bridge of the nose. Gently massage outward following the line of the bone below the eye.
4. Place first finger in the hollow of the temple at the outer corner of the eye. Massage clockwise, then counterclockwise.
5. Place the first and second finger in the hollow at the back of the neck, which is below the base of the skull and about one and a half inches from the midline (the first prominent hollow). Press in on the point and massage clockwise, then counterclockwise.

🕮 Step 12 Natural Healing with Herbal and Dietary Therapy

- ❑ Traditional Chinese medicine practitioners believe in a whole-body, or **holistic**, approach to wellness. What better way to begin this approach than by analyzing and focusing on what we consume?

Herbs

The TCM practitioner also studies **herbology**, which is the division of TCM that would be the equivalent of Western medicine's drug therapies. TCM has more than 400 substances used in healing. Most of the substances come from plants, including bark, roots, leaves, inner-core resins, stems, and sticks. Different parts of the same plant, or plant parts gathered at different times, will have different healing properties.

Herbology uses bark, roots, leaves, inner-core resins, stems and sticks.

TCM has long made herbology part of its standard treatment program. Some Western acupuncturists are also beginning to incorporate a knowledge of traditional Eastern herbs into their studies of traditional Western herbs. The proper herbs can do wonders for strengthening and balancing chi.

Plants are powerful. For example, digitalis is a plant that is used in the treatment of some forms of heart disease. (Ironically, this same plant can be poisonous to children who suck on its leaves or swallow its seeds!) Another example is the use of willow bark as an effective compound in original aspirin. There are hundreds of examples of herbs being used medicinally.

Herbs are classified according to the five elements. When a patient seeks herbal treatment, the TCM practitioner carries out an assessment. She tries to find out which of the 12 main organs are out of balance, how yin and yang energies are balanced in relation to each other, which of the vital substances are deficient or excessive, and whether there are any **pathogenic** (disease-causing agents) factors that need to be cleared from the body. After making a diagnosis, the herbalist gives the patient herbs or a prescription for herbs that can be filled by an herb supplier.

A number of massage therapists become interested in herbology and go on to study it and become licensed herbologists. If *you* are interested in this subject, keep in mind that until you become a licensed herbologist, you must not prescribe herbs for others.

Dietary Therapy

Dietary therapy is considered an integral part of Chinese treatment, and it is included in prevention, diagnosis, and treatment. Just as in herbology, dietary therapy relies on the concept of balance. A practitioner evaluates each patient to determine imbalances and constitution. Dietary approaches, along with herbs, are then used to treat any imbalances and encourage optimal health in the patient.

If you'll recall, TCM practitioners classify some foods as yang and some as yin, designations that refer to effects on organ function and movement of chi. The Chinese use the five flavors in dietary theory as well, again aiming to restore harmony in the body:

- Sweet foods are associated with the earth element.
- Sour foods are associated with wood.
- Bitter foods correspond with fire.
- Salty foods correspond with water.
- Pungent or spicy foods are associated with metal.

Each organ system and element responds to certain foods. Simplistically, eating a variety of unprocessed foods of different flavors generally pleases the body.

✍ Step 13 Practice Exercise 14-2

❑ Match the term to the correct description or phrase.

1. _____ **wood element**
2. _____ **metal element**
3. _____ **water element**
4. _____ **earth element**
5. _____ **fire element**
6. _____ **Shiatsu**
7. _____ **acupressure**
8. _____ **herbologist**
9. _____ **sweet foods**
10. _____ **spicy foods**

a. enthusiastic, social, knows no limits; sense is taste
b. assesses balance of the 12 main organs and yin and yang energies
c. color is black; deficiency results in loss of energy and direction
d. color is green; organs are liver and gallbladder
e. pressure of the fingers on strategic points
f. associated with earth element
g. excess results in smothering; deficiency results in absentmindedness
h. integrity is hallmark; grief is emotion
i. using thumbs and fingers to apply pressure to acupoints
j. associated with metal

🗝 Step 14 Review Practice Exercise 14-2

❑ Compare your answers to Practice Exercise 14-2 with the Answer Key at the end of this pack. Correct any mistakes you may have made.

🕮 Step 15 Lesson Summary

❑ Traditional Chinese medicine is a complicated medical system. While we've only touched on the fundamentals of TCM, you may find these holistic theory basics helpful in your work as a massage therapist. Who knows? You may even decide to further study this classic healing art.

Even if you don't, you know the basics of chi and how it travels through the body (via meridians). And, hopefully, you've had a little fun classifying your friends, family, and yourself with the five-element theory. You also have had a chance to think about the effects of what we consume and how TCM practitioners integrate herbal and dietary therapies into their holistic approach to wellness.

Later in your course, you'll learn some acupressure and Shiatsu techniques that you may want to incorporate into your own massage therapy work. But before you move on, take a few moments to complete your Mail-in Quiz. Good luck!

✉ Step 16 Mail-in Quiz 14

a. Be sure you've mastered the instruction and the Practice Exercises that this quiz covers.

b. Mark your answers on your quiz. Remember to check your answers with the lesson content.

c. When you've finished, transfer your answers to the Scanner Answer Sheet included. Use only blue or black ink on your Scanner Answer Sheet.

d. **Important!** Please fill in all information requested on your Scanner Answer Sheet or when submitting your quiz online.

e. Submit your answers to the school via mail, e-mail, fax or, to receive your grade immediately, submit your answers online at www.uscareerinstitute.edu.

Mail-in Quiz 14

Select the single best answer to complete each sentence.

1. **Traditional Chinese medicine has been around for about _____ years.**
   a. 1,000
   b. 500
   c. 5,000
   d. 10,000

2. **The movement of the wind, turning of the earth and the way the sun shines are all examples of _____.**
   a. gu chi
   b. chi
   c. meridians
   d. earth elements

3. **When _____ is/are balanced, a person has a _____ state of mind and a healthy body.**
   a. meridians, balanced
   b. acupoints, healthy
   c. chi, unhealthy
   d. chi, healthy

4. _____ chi is thought to be stored in the kidneys and drawn on throughout life.

a. Jing
b. Gu
c. Shen
d. Wei

5. Breathing deeply and exercising in clean air are thought to increase _____ chi.

a. gu
b. shen
c. da
d. jing

6. Eating junk food and drinking soft drinks are thought to weaken _____ chi.

a. gu
b. shen
c. da
d. jing

7. There are _____ major meridians, each associated with an organ.

a. 6
b. 5
c. 12
d. 10

8. The _____ govern(s) the circulation of chi through the torso, and Western thought believes it is associated with glandular function.

a. triple warmer
b. heart protector
c. meridians
d. pericardium

9. The _____ is/are thought to screen depressing and delusionary ideas from the heart.

a. triple warmer
b. heart protector
c. meridians
d. ch

10. _____ treats health problems by addressing the flow of chi. The practitioner places needles along meridian points to either stimulate or sedate these areas.

a. Chi theory
b. Acupuncture
c. Shiatsu
d. Acupressure

11. Light is yang, and dark is yin. Too much light is considered _____.

a. excess yin
b. deficient yin
c. deficient yang
d. excess yang

12. Each element in the five-element theor y is related to a set of _____.

a. organs
b. meridians
c. personality traits
d. all of the above

13. The _____ person would rather issue commands than take orders. This person has a strong personality and likes to be active.

a. earth
b. fire
c. wood
d. metal

14. A(n) _____ person is adaptable and organized.

a. earth
b. metal
c. fire
d. water

15. The _____ person is nurturing and kind, often with a pleasant voice and face.

a. earth
b. metal
c. wood
d. fire

16. The _____ person is a person of many moods and tends to be analytical in nature.

a. metal
b. fire
c. water
d. earth

17. The _____ and _____ are ruled by water.

a. kidneys, urinary bladder
b. gallbladder, lungs
c. large intestine, stomach
d. stomach, spleen

18. The Shiatsu practitioner applies pressure to points for many benefits, including _____.

a. increased levels of chi, restoring harmony between mental and physical states, and helping wood to feed fire
b. dispersing toxins, relaxing muscles and improving circulation of blood and lymph
c. soothing the nervous system, relieving headache and relaxing sore and stiff muscles
d. both b and c

19. Pressing the area of the hand between the thumb and first finger is a(n) _____ technique used to relieve headaches.

a. Shiatsu
b. herbology
c. acupressure
d. acupuncture

20. Herbal and dietar y therapy are often used by TCM practitioners to _____.

a. prepare the patient for acupressure or Shiatsu therapies
b. treat imbalances and encourage optimal health in the patient
c. open up meridians so chi flows evenly through them
d. all of the above

Congratulations

You have completed Lesson 14,

Theory of Traditional Chinese Medicine—

Do not wait to receive the results of your quiz before you move on.

You have completed Pack 3!

Can you believe that you have already surpassed the halfway mark of your course? Congratulations are in order! You only have two more instructional packs to go before completing your Massage Therapy course.

In this pack, you successfully completed three more movement and support lessons, so you are now familiar with the bones, joints, muscles, and landmarks of the forearm and hand, the head and neck, and the torso. (And only two more movement and support lessons to go before you have a complete foundation on which to build your budding massage therapy career!)

You've also learned how to incorporate those Swedish massage techniques you've been perfecting into a full-body massage by following suggested Swedish procedures. And as your expertise grows, you will learn what procedures work best for each of your practice clients. (Is that line of eager family and friends snaking out your door yet?)

Lastly, you've immersed yourself in some basic traditional Chinese medicine concepts like chi, meridian theory, and the five-element theory. In the next pack, you'll use this knowledge to learn how to practice a few energy techniques, such as tracing your meridians.

In addition to learning and practicing a few energy techniques in Pack 4, you will learn how to create a client-centered practice and how to keep helpful SOAP notes for each client. Also, you will get your feet wet in the world of hydrotherapy, and you'll learn how and when to incorporate hydrotherapy techniques into massage therapy sessions.

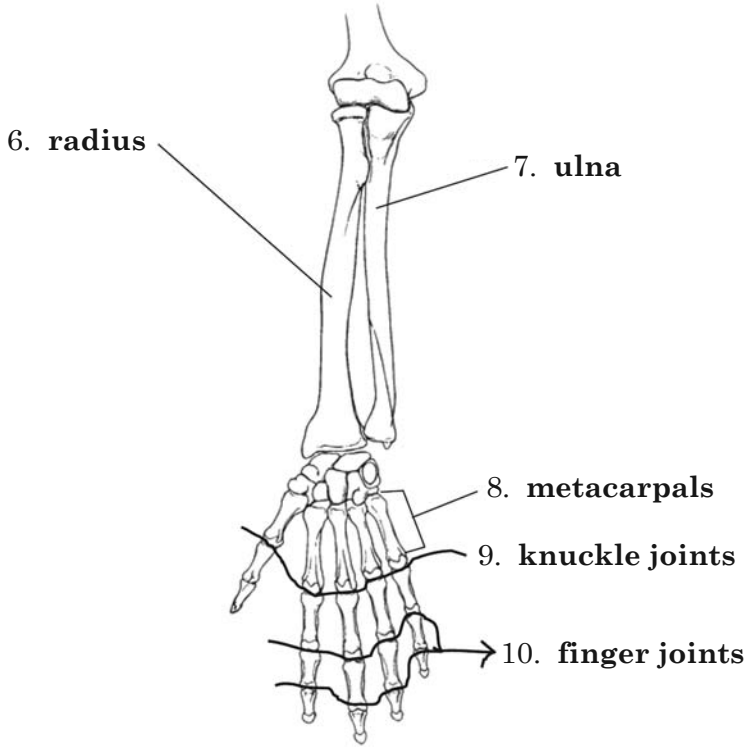
If you have any questions now or along the way, don't hesitate to pick up the phone and call your instructor. At U.S. Career Institute, we are committed to helping you succeed in your new career goal. And we'd love to hear from you! Are you ready to move on to the next pack? Let's go!

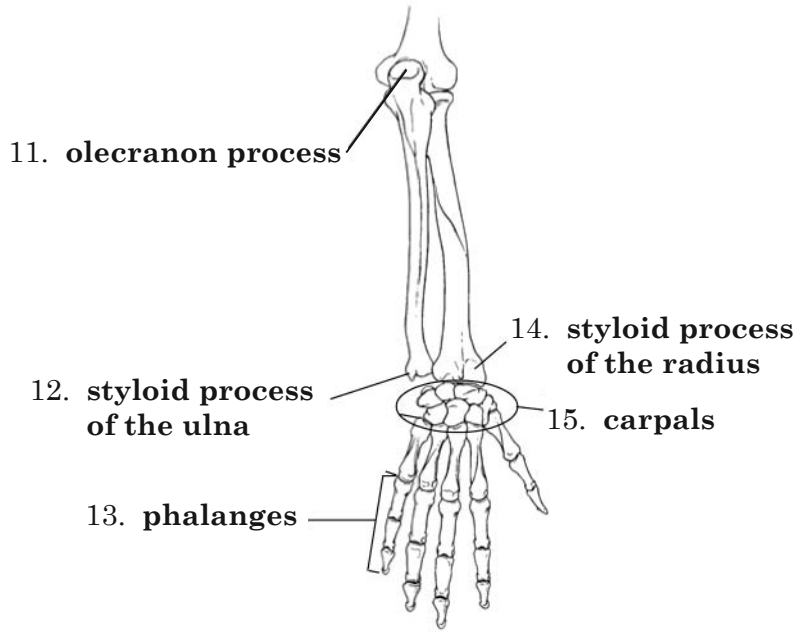
Pack 3
Answer Key

Lesson 10

Practice Exercise 10-1

1. **b** **deep**—profundus
2. **c** **hand**—manus
3. **d** **smaller**—minimi
4. **e** **pertaining to the wrist**—carpi
5. **a** **having to do with the thumb**—pollicis





Practice Exercise 10-2

1. **g** **movements that involve bigger bones and muscles**—gross motor movements

2. **d** **refined movements made with forearms, wrists, hands and fingers**—fine motor movements

3. **e** **works as an antagonist to the triceps brachii muscle group—**biceps

4. **b** **the "biceps' best friend"**—brachialis

5. **h** **originate at the medial epicondyle of the humerus and insert in the hand**—hand flexors

6. **c** **three-headed muscle on the backside of the humerus—**triceps

7. **a** **a deep muscle under all the long muscles of the forearm, between the radius and the ulna**—suppinator

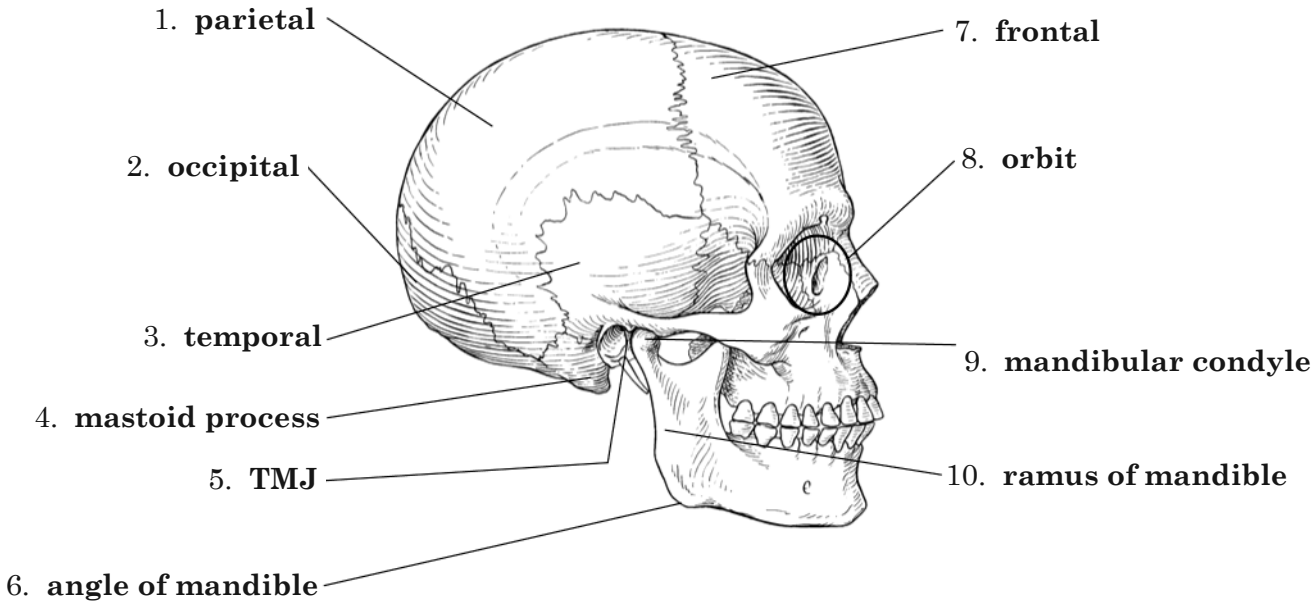
8. **i** **assists with elbow flexion; the only muscle whose fibers run at an angle in relationship to other muscles in its region**—pronator teres

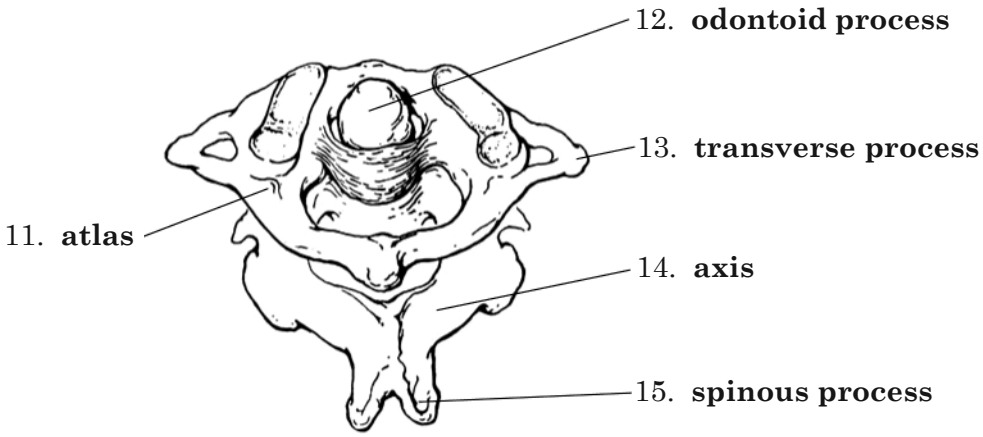
9. **f** **superficial, triangular-shaped muscle that assists in elbow extension**—anconeus

10. **j** **the only muscle to span the length of the forearm without crossing the wrist joint**—brachioradialis

Lesson 11

Practice Exercise 11-1





Practice Exercise 11-2

1. **h** **helps you lift your eyebrows and wrinkle your forehead**— frontalis

2. **i** **its primary actions are to close the jaw and to maintain the jaw in position when it is at rest**—temporalis

3. **f** **the strongest muscle for its size in the entire body**—masseter

4. **d** **a group of three muscles deep in the neck**—scalenes

5. **e** **two muscles in the back of the neck that extend and rotate the head**—splenius

6. **c** **usually protrudes vertically as the long, tight muscle on the front of your neck opposite the side toward which you've turned your head**—SCM (sternocleidomastoid)

7. **b** **a flat muscle that extends across the back, posterior shoulders and up the back of the neck**—trapezius (traps)

8. **a** **originates in the transverse process of C1 through C4 and inserts into the superior angle of the scapula**—levator scapula

9. **g** **the fibrous membrane that covers the top of the skull**—aponeurosis

10. **j** **eight muscles that are the deepest muscles of the upper, posterior neck**—suboccipital muscles

Lesson 12

Practice Exercise 12-1

1. While you're giving a massage, you can maintain your connection with your client through **b. touch**.

2. The order in which a massage progresses—the design or pattern of a massage—is called the **d. sequence**.

3. Deep breathing, or belly breathing, involves slowly inhaling through the nose and **c. expanding the abdomen first and then the chest**.

4. For massage, the concept of going from *general to specific and back again* means to go from **a. surface to deep and back out**.

5. Before the client arrives, you should **d. all of the above.**

6. One chair massage session normally lasts about **b. 15 minutes**.

7. Before the massage, you should ask if the client **a. wants her scalp and face massaged.**

8. When performing a massage on the scalp, you use **b. circular friction techniques using the pads of your fingers to make small circles.**

9. When performing a face massage, you should work from the **c. center of the face outward to the periphery**.

10. A neck massage requires you to **a. support the client's head during some steps of the sequence.**

Practice Exercise 12-2

1. Massage to the abdomen should encourage the natural flow in the **large intestine**; abdominal strokes should move in three directions: lower right upward, across middle, down left.

2. It's especially important to pay attention to your stance and posture while you're massaging the **lower limbs**, because these are the longest muscles in the body.

3. Whenever you work on **feet**, be aware that some people are highly ticklish in this area.

4. The turning over sequence described in this lesson helps clients stay relaxed while you help them with **drapes** and logistics.

5. While massaging the backs of the lower limbs, apply lotion with light effleurage strokes, using more pressure while stroking toward the **heart**.

6. For large muscles, such as the **gluteus maximus** and **hamstrings**, the heel of the hand or the knuckles are useful tools for deeper pressure.

7. While performing massage to the back, be very careful when working near the **kidneys** and the lower ribs.

8. After the back is thoroughly warmed up, you can **walk up** the client's spine by alternately moving the heels of your hands gently up the client's back.

9. As a finishing touch, you may use a gentle **rocking movement** to help deepen the relaxation.

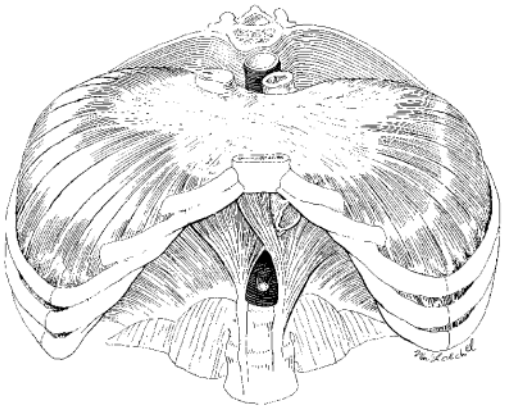
10. One chair massage session normally lasts about **15** minutes.

Lesson 13

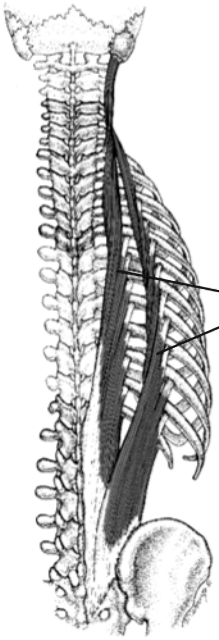
Practice Exercise 13-1

1. **c** **first seven vertebrae**—cervical vertebrae
2. **n** **"tailbone"**—coccyx
3. **p** **ribs 8 through 10**—false ribs
4. **q** **ribs 11 and 12**—floating ribs
5. **g** **larger-than-normal thoracic curvature**—hunchback (kyphosis)
6. **m** **superior ridge of the hipbone**—iliac crest
7. **j** **located at the top**—jugular notch
8. **b** **area between vertebral processes**—lamina groove
9. **f** **last five vertebrae**—lumbar vertebrae
10. **l** **front bone of the pelvis**—publis
11. **a** **breathing**—respiration
12. **i** **lateral curvature of the spine**—scoliosis
13. **h** **larger-than-normal lumbar curvature**—swayback (lordosis)
14. **e** **includes the sternum, ribs and thoracic vertebrae**—bony thorax
15. **o** **ribs 1 through 7**—true ribs

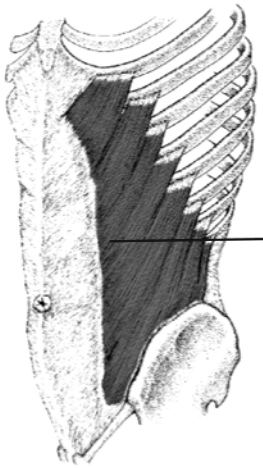
Practice Exercise 13-2



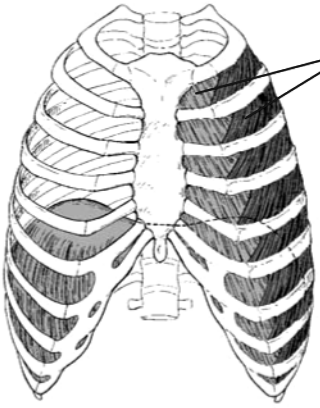
1. **diaphragm**



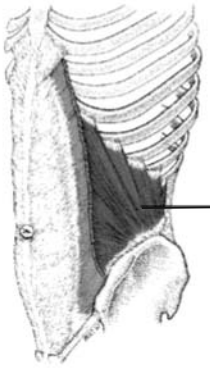
2. **erector spine**



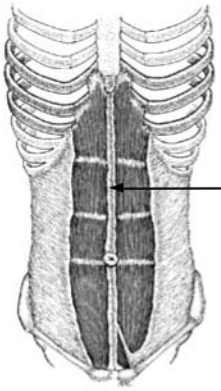
3. **external obliques**



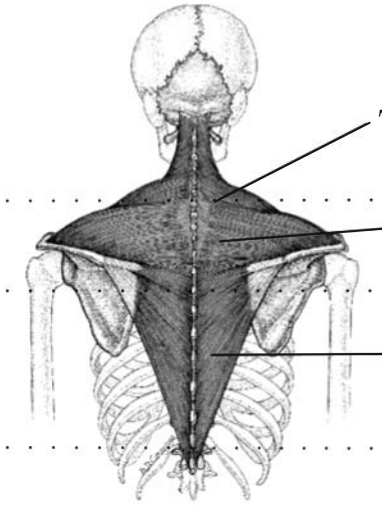
4. **intercostals**



5. **internal obliques**



6. **linea alba**

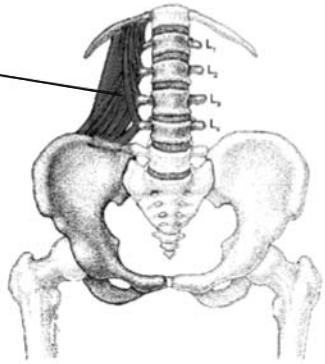


7. **upper trapezius**

8. **middle trapezius**

9. **lower trapezius**

10. **quadratus lumborum**



Lesson 14

Practice Exercise 14-1

1. TCM seeks to **enhance** and **balance** the life force present within people.
2. **Chi** is the invisible, animating force of life.
3. Favorable **shen chi** results from having good relationships with friends and family.
4. **Jing chi** is the life force we inherit from our parents.
5. Shallow breathing or smoking results in decreased **da chi**.
6. The combination of all forms of chi is **wei chi**.
7. We get **gu chi** from what we eat and drink.
8. Chi flows through channels called **meridians**.
9. If parts of those channels have too much chi stimulation, a(n) **excess** of chi results.
10. Yin and yang are opposite to each other; they consume and **transform** each other, and they are **interdependent**.

Practice Exercise 14-2

1. **d** **color is green; organs are liver and gallbladder**—wood element
2. **b** **integrity is hallmark; grief is emotion**—metal element
3. **c** **color is black; deficiency results in loss of energy and direction**—water element
4. **g** **excess results in smothering; deficiency results in absentmindedness**—earth element
5. **a** **enthusiastic, social, knows no limits; sense is taste**—fire element
6. **e** **pressure of the fingers on strategic points**—Shiatsu
7. **i** **using thumbs and fingers to apply pressure to acupoints**—acupressure

8. **b** **assesses balance of the 12 main organs and yin and yang energies**—herbologist

9. **f** **associated with earth element**—sweet foods

10. **j** **associated with metal**—spicy foods