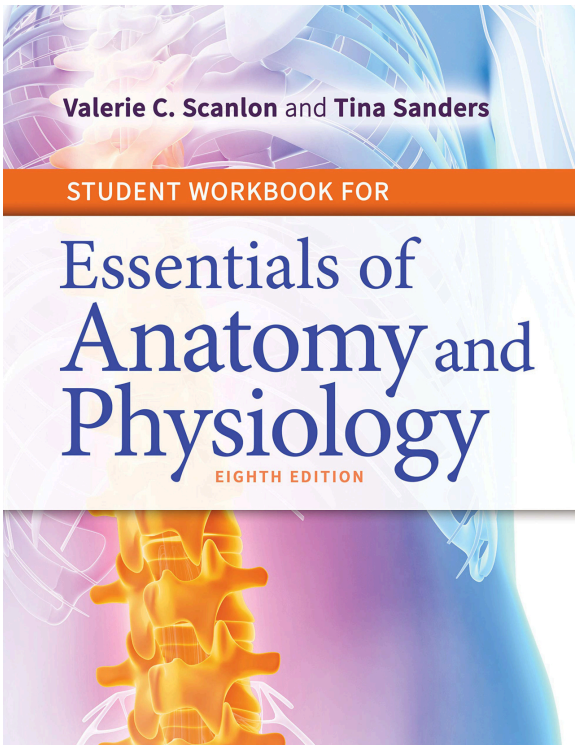


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To the Student

The purpose of this student workbook is to help you learn the material in the basic anatomy and physiology course you are about to take. If your goal is a career in the health professions, anatomy and physiology will be foundation sciences for your other courses. How much you learn and how well you learn it is up to you, so it is important to remember that real and lasting learning depends on many factors.

1. **Keep in mind that two of the best ways to learn something are to take a test on it and to teach it to someone.** This workbook has several different kinds of exercises that you can consider tests. Yes, the answers are in the back of the book, but do the exercises first, without looking, especially for the end-of-chapter tests. Then pay attention to anything you may have gotten wrong and try to figure out why (if you can figure out why you made a particular mistake, you will be very unlikely to make that same mistake again). And if a classmate asks you for help, don't pass up the chance to describe or explain something you know (and listen to yourself as you do).

2. **Time.** Try to give yourself enough study time to learn effectively. This may not always be easy, but it is worth striving for. Cramming the night before an exam may work once in a while, but setting aside some time for study every day is usually a much more successful strategy. Keep in mind that our brains consolidate memories while we sleep, so getting a good night's sleep before an exam can be very helpful.

3. **Self-discipline.** Try not to be discouraged by the amount of material you have to learn. Keep at it, and you will find that the more you learn, the easier it becomes to learn. At first you will be assembling a small foundation, and then you will build upon it. The more extensive your foundation, the more you can add to it. Wherever possible, make connections between new material and previous material. This will broaden your foundation. The more you practice making connections, the easier it becomes to see and learn new ones.

4. **Know when to memorize and when to understand.** Some material simply must be memorized, but other material requires true comprehension. For example, each bone in the body has a name, and you will have to memorize the name of each bone and its location in the body. Will this memorization serve a purpose? Indeed it will, for when you learn the actions of muscles, you will have to know the bones to which each muscle is attached. Memorization is often the foundation for comprehension. And if you have made a mental picture of the skeleton, so much the better, adding a visual dimension to learning.

5. **Ask questions—of your teacher, your fellow students, and yourself.** When you don't understand something, ask your teacher or a classmate, and you'll probably get an answer. But what kind of questions can you ask yourself? Very simple yet very important ones. If you are studying a part of the body, ask yourself: What is its name? Where is it? What is it made of? What does it do? For such things as cells, tissues, or organs, we can summarize these questions as name, location, structure, and function. For a process that takes place within the body, the questions will be a little different, but still simple. Ask yourself: What is happening? What is the purpose for this? If you can answer these questions, you truly comprehend and understand the process.

Continued

6. **Keep your brain intrigued.** When you study, try to avoid doing the same thing again and again. For example, do not simply read your class notes over and over. The human brain loves novelty but is easily bored with repetition and will tune it out (it may begin thinking about what it might like for dinner). Human brains tend to be curious. Keep your brain engaged; make your brain do something different with the information. This workbook is a start, but do not underestimate your own creativity. If you like music, use a favorite song to name the bones of the skull or the steps in the process of protein synthesis or muscle contraction. If you like to dance, then dance to help you learn the muscles of the body.

Drawing your own simple illustrations is an effective way to help you form mental pictures. They do not have to be great art, merely be meaningful to you. You cannot take textbook illustrations into a test, but you can bring with you as many mental pictures as you have created.

This book was written for you, to help you to learn, to help you continue your education, and to help you become a successful member of the profession you have chosen. If you have comments or suggestions, I would be pleased to hear from you. Please send your comments to me in care of: F. A. Davis Company, 1915 Arch Street, Philadelphia, PA 19103.

Valerie C. Scanlon

How To Use This Workbook

Each chapter in this workbook corresponds to the same chapter in the textbook. The workbook chapters are organized into sections that correspond to the major sections of the textbook's chapters so that you may proceed from topic to topic before completing the entire chapter in the textbook.

TYPES OF EXERCISES

The types of exercises within each section are completion (fill-in) questions, matching columns, and diagrams with labeling and coloring exercises. In addition, each chapter includes a clinical applications section and a crossword puzzle.

Completion Questions. For these questions, you are asked to supply the missing word or words in a statement. For example:

All the bones of the body are collectively called the _____.

On the line provided, you would write: skeleton.

When you have filled in all the blanks (some sentences will have more than one), read the sentence aloud. Yes, out loud (unless you're in the library, perhaps), so that you can actually hear the information. If you hear yourself saying something, and not just think it, that something becomes easier to recall.

Matching Columns. In these exercises, you are asked to match the terms in one column with the descriptive phrases in another column. For example:

Match each holiday with its proper custom. Use each letter once.

1) Valentine's Day _____
2) Halloween _____
3) July 4th _____
4) Thanksgiving _____

A. Fireworks
B. Costumes and pumpkins
C. Turkey dinner
D. Flowers and candy

In this matching column, there is only one letter per answer line: 1) D 2) B 3) A 4) C

For some matching columns, there will be more than one letter on some answer lines. When the directions say "Use each letter once," they mean that every letter belongs on one or another of the answer lines. There will never be any extra answers. For example:

Match each part of a week with the proper days. Use each letter once. One answer line will have two correct letters, and the other will have three.

1) Weekend _____
2) Weekdays _____

A. Sunday
B. Tuesday
C. Thursday
D. Saturday
E. Wednesday

To answer this question completely, you should write: 1) A, D 2) B, C, E

Occasionally, a letter or letters may be used more than once in a matching column. When this happens, the directions will clearly state this. Remember to read the directions carefully, and remember also that there will never be any unused or leftover answers.

Will reading your completed matching column out loud be helpful? Do you recall the suggestion about singing? It may be worth a try.

Diagram Exercises. Many diagrams have been included in this workbook to give you opportunities for the visual application of your knowledge and help in forming your own mental pictures. In labeling exercises, you will provide names for the parts indicated by the numbered leader lines on the diagram.

Some of the diagrams will be even more useful if you color certain parts. Colors help add emphasis to a diagram and may help you retain a mental picture of that part of the body. Some of the diagrams include a color key below the illustration, on which you may indicate the colors you have used for each part. In most cases, the choice of colors is up to you, but there are some traditional colors. Arteries, for example, are always red in anatomic illustrations. Veins are blue, lymphatic structures are green, and nerves are yellow. These colors may be used for other structures, of course, but they should always be used for the structures mentioned above.

Even if no color key is included, you may find it helpful to color certain diagrams. Some of us are visual learners, and a few colors help us keep the picture clearly in mind and link the picture to the appropriate words.

Crossword Puzzles. The crossword puzzle in each chapter consists of words taken from the New Terminology lists at the beginning of that chapter in the textbook. Try the puzzle only after you have read the entire chapter in the text so that all the new terms will be familiar to you. You may wish to refer to the lists in the textbook as you do the puzzles.

Clinical Applications. The situations and questions in this section of each chapter have been taken from the text material on diseases and disorders and, especially, from the discussions that appear in the boxes in each chapter. These are simple applications and are meant to make the text material more relevant and meaningful for you.

CHECKING YOUR ANSWERS

When you have completed a chapter section in the workbook (or, in the case of the crossword puzzles, when you have completed the whole chapter), check your answers against the Answer Key included at the end of this workbook. If you have answered a question incorrectly, reread the appropriate section in the textbook as a review. Try to figure out why you made the mistake. Was it simply not knowing the answer? Not reading the question carefully? Confusing two terms that sound alike? Whatever the reason, if you can determine why you made the mistake, you probably won't make it again (when it counts on a test). Remember also that once you have completed a section and made any necessary corrections, that section becomes a concise summary of the essential information on that topic and may be used for a quick review or more intensive studying.

END-OF-CHAPTER TESTS

When you complete each chapter, you will find three comprehensive chapter exams. All of these exams are in a multiple-choice format, though each is a different variation of that format. Answers to them can be found in the Answer Key at the back of the workbook.

Multiple Choice Test #1. This test consists of traditional multiple-choice questions for which you are asked to select the correct answer from four choices. For example:

Which of these is a plant?

a) earthworm b) fern c) frog d) dog

Circle or underline the correct answer, which is b.

This type of question tests your knowledge and your ability to recognize the correct answer. When you take this test, answer all the questions. If you are not sure, take a guess and make a note for yourself about why you have made this particular choice. Then, when you check your answers, you can pay special attention to these to see if your thinking was correct. As always, if you do make a mistake, try to determine why so that you will not make the same mistake again.

Multiple Choice Test #2. The questions on this test evaluate your level of knowledge, reading ability, and thinking ability. Each question asks you to select the statement that is NOT true about a particular topic, and then to correct the false statement to make it true. For example:

Which statement is NOT true of dogs?

a) Dogs have four legs and two ears.

b) Many dogs can be taught to do simple tricks.

c) Many dogs are friendly and loyal.

d) Very young dogs are called kittens.

Reword your choice to make it a correct statement.

In this example, choice d is not true and is therefore the correct answer. You may want to underline the part of the answer choice that is not true (in this case, kittens) to help you focus your thinking. Then, rewrite the statement (or just the incorrect part) to make it true: Very young dogs are called puppies.

Will you have to read carefully and think clearly when you take a test like this? Yes, but if you do well on a self-test such as this, you can be confident that you know and understand the material.

Multiple Choice Test #3. The questions in this test are in a multiple response format (also called multiple selection or group multiple choice). One question consists of several statements that are all concerned with a particular topic. The directions will tell you to select all of the statements that are correct (true). Any number and combination of statements (including none or all) may be true. As always, you should read carefully. For example:

Which of the following statements are true of the human skeleton? (Select all correct answers.)

a) The spine is made of individual bones called vertebrae.

b) The skull protects the eye and ear receptors from mechanical injury.

c) The rib cage has 14 pairs of ribs.

d) Another name for the kneecap is the calcaneus.

e) The shoulder joint is formed by the scapula and radius.

f) The femur is the shinbone.

As you see, this type of question is simply a true–false test on one topic. In this case, only a and b are correct.

If you work with friends or in a study group, make up questions like this and test one another. The more you practice (and keep your brain interested and engaged with new work), the more familiar the material will become, and the more comfortable you will be at test time, regardless of the format used for questions.

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Chapter 1

Organization and General Plan of the Body

This chapter describes how the body is organized, from simple to more complex levels. The terminology used to describe the body is also presented in this chapter.

LEVELS OF ORGANIZATION

Complete each statement and give appropriate examples.

1. a) The simplest level of organization is the _____ level.
   b) Give three examples of organic chemicals. _____, _____, and _____
   c) Give three examples of inorganic chemicals. _____, _____, and _____
2. a) The most complex level of organization is the _____ level.
   b) Give three examples of this level. _____, _____, and _____
3. a) The simplest living level of organization is the _____ level.
   b) When cells with similar structure and function are grouped and work together, they form a _____.
   c) A group of tissues that is arranged in a particular way to accomplish specific functions is called an _____.
4. Match each group of tissues with its function (a letter) and its example in the body (a number).

   Each letter and number are used once.

   Epithelial tissue _____
   Connective tissue _____
   Muscle tissue _____
   Nerve tissue _____

Functions

A. Supports, transports, or stores materials
B. Contracts and brings about movement
C. Transmits impulses that regulate body functions
D. Covers or lines surfaces

Examples

1. The lining of the stomach and the epidermis of the skin
2. The heart and skeletal muscles
3. Bone, blood
4. Spinal cord, brain