

Part 2

**Human Anatomy  
and Physiology**

# Overview

**COMPLETION:** In the space(s) provided, write the word(s) that correctly complete(s) each statement.

1. The study of the gross structure of the body or the study of an organism and the interrelations of its parts is (anatomy) .
2. The science and study of the vital processes, mechanisms, and functions of an organ or system of organs is (physiology) .
3. The study of the structural and functional changes caused by disease is (pathology) .
4. The scientific study of muscular activity and the mechanics of body movement is (kinesiology) .
5. The delicate physiologic balance that the body strives to maintain in its internal environment is (homeostasis) .
6. The abnormal and unhealthy state of all or part of the body where it is incapable of carrying on its normal function is (disease) .
7. A (symptom) of a disease is perceived by the victim whereas a (sign) of a disease is observable by another person.

**KEY CHOICES:** Massage can have a direct, an indirect, or a reflex effect on various functions of the body. Put the appropriate key letter for each of the following phrases in the spaces provided.

D = Direct effect

I = Indirect effect

R = Reflex effect

- (I) 1. Increased circulation to the muscle and internal organs
- (D) 2. Stretching of muscle tissue
- (R) 3. Slower, deeper breathing
- (D) 4. Loosening of adhesions and scar tissue
- (R) 5. Reduced heart rate
- (I) 6. Reduced blood pressure
- (D) 7. Increased local circulation of venous blood
- (I) 8. General relaxation of tense muscles

**KEY CHOICES:** Most diseases have signs and/or symptoms. Put the appropriate key letter for each of the following phrases in the spaces provided.

X = Symptom

O = Sign

- (X) 1. nausea
- (O) 2. abnormal skin color
- (X) 3. pain
- (X) 4. chills
- (O) 5. elevated pulse
- (X) 6. severe itching
- (X) 7. abdominal cramps
- (O) 8. fever
- (X) 9. dizziness
- (O) 10. skin ulcers



**COMPLETION:** In the space(s) provided, write the word(s) that correctly complete(s) each statement.

- Two hormones that are secreted by the adrenal glands are (adrenaline) and (cortisol).
- The protective body sensation that warns of tissue damage or destruction is (pain).
- The two reactions to pain are (psychological) and (physical).
- Inhibited blood flow to an area of the body is known as (ischemia).
- A syndrome that often starts as a simple muscle spasm that is complicated by muscle splinting and constricted circulation is the (pain-spasm-pain cycle).
- Much of the discomfort in the condition of the previous question is from (ischemic pain).
- Psychologically, skillfully applied therapeutic massage helps to reduce pain by relieving (anxiety) and (fear).
- In a pain-spasm-pain cycle, pain is intensified because of (ischemia).
- Therapeutic massage on contracted ischemic tissue relieves (muscle spasms) and restores (circulation).
- Pain is an indication of (tissue damage) or (nerve irritation).
- Generally, the more severe the pain, the more severe the (tissue damage).
- Bacteria, viruses, fungi, and parasites are (microorganisms).
- If pathogenic organisms enter the body in large enough numbers to multiply and become capable of destroying healthy tissue, they cause (infection).
- If these organisms are confined to a small area, the condition is considered a (local infection), but if they spread throughout the body, the condition is termed a (systemic infection).

15. When tissue is damaged from invading organisms or physical injury, substances are released that cause (inflammation).
16. The four signs and symptoms of inflammation are (swelling), (redness), (heat), and (pain).
17. An elevated body temperature that accompanies infectious diseases is a (fever).
18. The fibrous connective tissue formed as a wound heals is (scar tissue).
19. Connective tissue fibers are produced in healing tissue by (fibroblasts).

**SHORT ANSWER:** In the spaces provided, write short answers to the following questions.

1. List six possible direct causes of disease.
  - a. (disease-producing organisms)
  - b. (trauma)
  - c. (environmental agents)
  - d. (malnutrition)
  - e. (degenerative processes)
  - f. (stress)
2. Stress is most notably associated with the adrenal glands and their secretion of the “fight or flight” hormones. Briefly describe what happens to the following body functions during the “fight or flight” reaction.
  1. Muscle tone (increases)
  2. Blood pressure (rises)
  3. Digestion (slows down)
  4. Circulation to skeletal muscles (increases)
  5. Circulation to digestive organs (decreases)
  6. Red blood cells (are released into the blood and mobilized)

3. Different types of tissue heal at different rates. Number the following from 1 to 5 according to how fast they mend: 1 is the fastest, 5 is the slowest.

(5) nerve tissue

(3) bone

(1) skin

(2) muscle

(4) ligament

**COMPLETION:** In the space(s) provided, write the word(s) that correctly complete(s) each statement.

1. Physiologically, skillfully applied therapeutic massage helps to reduce pain by providing (pleasurable stimulation, which is carried to the brain on thicker, faster, more numerous nerve fibers that actually override or “drown out” the pain signals).
2. If massage increases the overall intensity of the pain, the therapist should (discontinue the massage and refer the client to a doctor).
3. A wellness-oriented person attempts to maintain a balance between (mind [mental]), (body [physical]), and (spirit [emotional]).
4. In medical terminology, compound words are constructed of (stems or root words), (prefixes), and (suffixes).

**MATCHING:** In the following six exercises match the term in the first column with the meaning in the second column. Write the letter of the appropriate term in the space provided.

### WORD ROOTS I

<u>(C)</u>	1. arth(ro)	A. lung
<u>(J)</u>	2. chondr/o	B. tissue
<u>(E)</u>	3. cyt	C. joint
<u>(G)</u>	4. hem	D. nerve
<u>(B)</u>	5. hist	E. cell
<u>(L)</u>	6. my(o)	F. heat
<u>(D)</u>	7. neur(o)	G. blood
<u>(I)</u>	8. oss, ost(e)	H. vessel
<u>(K)</u>	9. phleb	I. bone
<u>(A)</u>	10. pulmo	J. cartilage
<u>(F)</u>	11. therm	K. vein
<u>(H)</u>	12. vas	L. muscle

### WORD ROOTS II

<u>(E)</u>	1. brachi	A. head
<u>(J)</u>	2. cardi	B. kidney
<u>(A)</u>	3. cephal	C. foot
<u>(G)</u>	4. derm	D. stomach
<u>(D)</u>	5. gastr(o)	E. arm
<u>(F)</u>	6. gyn	F. woman
<u>(I)</u>	7. hepat	G. skin
<u>(L)</u>	8. labi	H. lung
<u>(B)</u>	9. nephr(o)	I. liver
<u>(K)</u>	10. ocul	J. heart
<u>(H)</u>	11. pneum	K. eye
<u>(C)</u>	12. pod	L. lip



## PREFIXES I

- |            |            |                                    |
|------------|------------|------------------------------------|
| <u>(D)</u> | 1. ab-     | A. beyond, outside of, in addition |
| <u>(I)</u> | 2. ad-     | B. against                         |
| <u>(B)</u> | 3. anti-   | C. against, counter to             |
| <u>(G)</u> | 4. ante-   | D. away from                       |
| <u>(L)</u> | 5. bio-    | E. inside                          |
| <u>(C)</u> | 6. contra- | F. above, in addition              |
| <u>(H)</u> | 7. ex-     | G. before                          |
| <u>(J)</u> | 8. infra-  | H. out of                          |
| <u>(A)</u> | 9. extra-  | I. to, toward                      |
| <u>(E)</u> | 10. intra- | J. beneath                         |
| <u>(K)</u> | 11. sub-   | K. under, below                    |
| <u>(F)</u> | 12. super- | L. life                            |

## PREFIXES II

- |            |               |                            |
|------------|---------------|----------------------------|
| <u>(H)</u> | 1. ect-       | A. under, below            |
| <u>(C)</u> | 2. end-(o)    | B. one, single             |
| <u>(F)</u> | 3. epi-       | C. inside, within          |
| <u>(L)</u> | 4. hyper-     | D. around                  |
| <u>(A)</u> | 5. hypo-      | E. stupor, numbness        |
| <u>(G)</u> | 6. mega-      | F. upon, over, in addition |
| <u>(J)</u> | 7. micr-(o)   | G. large, extreme          |
| <u>(B)</u> | 8. mon-(o)    | H. outside, without        |
| <u>(E)</u> | 9. narc-      | I. pertaining to disease   |
| <u>(I)</u> | 10. path-     | J. small                   |
| <u>(D)</u> | 11. peri-     | K. false                   |
| <u>(K)</u> | 12. pseud-(o) | L. above, extreme          |

**PREFIXES III**

- |            |            |                                |
|------------|------------|--------------------------------|
| <u>(I)</u> | 1. hemi-   | A. many, much                  |
| <u>(C)</u> | 2. hetero- | B. middle, midline             |
| <u>(G)</u> | 3. hom-    | C. the other                   |
| <u>(B)</u> | 4. medi-   | D. together, along with        |
| <u>(H)</u> | 5. multi-  | E. four                        |
| <u>(K)</u> | 6. para-   | F. single, one                 |
| <u>(A)</u> | 7. poly-   | G. common, same                |
| <u>(E)</u> | 8. quad-   | H. many, multiple              |
| <u>(L)</u> | 9. retro-  | I. half                        |
| <u>(D)</u> | 10. syn-   | J. three                       |
| <u>(J)</u> | 11. tri-   | K. next to, resembling, beside |
| <u>(F)</u> | 12. uni-   | L. backward                    |

**SUFFIXES**

- |            |             |                                  |
|------------|-------------|----------------------------------|
| <u>(E)</u> | 1. -ase     | A. diseased                      |
| <u>(J)</u> | 2. -algia   | B. study of, science of          |
| <u>(D)</u> | 3. -ectomy  | C. forming an opening            |
| <u>(G)</u> | 4. -graph   | D. surgical removal of body part |
| <u>(L)</u> | 5. -ia      | E. denoting an enzyme            |
| <u>(K)</u> | 6. -itis    | F. tumor                         |
| <u>(B)</u> | 7. -ology   | G. write, draw, record           |
| <u>(F)</u> | 8. -oma     | H. morbid fear of                |
| <u>(C)</u> | 9. -ostomy  | I. excision, cutting into        |
| <u>(I)</u> | 10. -otomy  | J. painful condition             |
| <u>(A)</u> | 11. -pathic | K. inflammation                  |
| <u>(H)</u> | 12. -phobia | L. a noun ending of a condition  |



10. The adrenal hormone that acts as an anti-inflammatory and antiallergenic in stressful situations is (b)  
a) DMSO c) estrogen  
b) cortisol d) adrenaline
11. Prolonged adrenal excretions make the body (a)  
a) exhausted c) strong  
b) energetic d) ecstatic
12. The pain-spasm-pain cycle is associated with (c)  
a) headaches c) muscle spasms  
b) heart attacks d) mental health
13. The condition in which contracted muscles inhibit blood flow to an area is called (b)  
a) constriction c) hypertension  
b) ischemia d) bruising
14. The existence of disease-producing organisms throughout the body is termed a/an (c)  
a) microorganism c) systemic infection  
b) inflammation d) local infection
15. A protective tissue response characterized by swelling, redness, heat, and pain is (d)  
a) ischemia c) sunburn  
b) spasm d) inflammation
16. In medical terminology, the root word usually indicates the (b)  
a) number c) condition  
b) body part d) treatment
17. The medical term prefix "a" means (c)  
a) one c) without  
b) many d) after
18. The medical term prefix "ambi" means (b)  
a) in twos c) walking  
b) both d) movement
19. The medical-term prefix "infra" means (a)  
a) beneath c) inside  
b) above d) outside

20. The medical-term suffix “algia” means \_\_\_\_\_ (d)  
 a) three c) inflammation  
 b) binding d) painful condition
21. The medical-term suffix “itis” means \_\_\_\_\_ (a)  
 a) inflammation c) resembling  
 b) old d) tumor
22. The medical-term suffix “pathic” means \_\_\_\_\_ (d)  
 a) germs c) toxic  
 b) tumor d) diseased
23. The medical term root “arth(ro)” means \_\_\_\_\_ (b)  
 a) joint c) blood  
 b) bone d) lung
24. The medical term root “derm” means \_\_\_\_\_ (c)  
 a) teeth c) skin  
 b) bone d) lung

**WORD REVIEW:** The student is encouraged to write down the meaning of each of the following words. The list can be used as a study guide for this unit.

adrenaline

*(Adrenalin, also called epinephrine, is one of the “fight or flight” hormones produced by the*

*adrenal glands.)*

anatomy

*(Anatomy is the study of the gross structure of the body and the interrelations of its parts.)*

cortisol

*(Cortisol is another one of the “fight or flight” hormones produced by the adrenal glands.)*

disease

*(Disease is an abnormal and unhealthy state of all or part of the body wherein it is incapable of carrying on its normal function.)*

fever

*(Fever is an elevated body temperature.)*

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homeostasis

*(Homeostasis is the internal balance of the body.)*

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infection

*(Infection is the reaction of the body to invasion by microorganisms.)*

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inflammation

*(Inflammation is a protective tissue response characterized by swelling, redness, heat, and pain.)*

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ischemia

*(Ischemia is localized tissue anemia from obstruction of the inflow of blood.)*

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ischemic pain

*(Ischemic pain is pain that results from restricted blood flow to an area of the body.)*

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kinesiology

*(Kinesiology is the scientific study of muscular activity and the anatomy, physiology, and mechanics of body movement.)*

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medical terminology

*(Medical terminology refers to the vocabulary or jargon used by health professionals when communicating with one another about the conditions of a patient, descriptions of procedures, and anatomic structures.)*

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microorganisms

*(Microorganisms are tiny animals or plants that are able to carry on living processes, such as bacteria, fungi, and viruses.)*

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pain

*(Pain is one of the body's primary sensations, along with touch, pressure, heat, and cold. Its function is primarily protective in that it warns of tissue damage or destruction somewhere in the body. Pain is the result of stimulation to specialized nerve ends called nociceptors.)*

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pain-spasm-pain cycle

*(The pain-spasm-pain cycle is a self-perpetuating painful condition that can begin with a simple injury that causes muscle spasm, ischemia, and further ischemic pain, causing more spasm.)*

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pathology

*(Pathology is the study of the structural and functional changes caused by disease.)*

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physiology

*(Physiology is the science and study of the vital processes, mechanisms, and functions of an organ or system.)*

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scar tissue

*(Scar tissue is a dense fibrous tissue that forms as an injury, wound, burn, or sore heals.)*

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sign of disease

*(A sign of disease is an observable indication of disease or bodily disorder.)*

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stress

*(Stress is any psychological or physical situation or condition that causes tension or strain.)*

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symptom

*(Symptom is subjective evidence of disease or bodily disorder.)*

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wellness

*(Wellness is a system of behaviors and habits that have a positive influence on health.)*

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