

21世纪大学医学英语

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# 基础医学英语

## FUNDAMENTAL MEDICAL ENGLISH

主编 高宝坤 谢崇国



高等教育出版社

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# Fundamental Medical English

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高等教育出版社

### 图书在版编目(CIP)数据

基础医学英语 / 郝长江, 董丽明总主编 —北京: 高等教育出版社,  
2002.8

ISBN 7-04-011347-3

I. 基... II. ①郝... ②董... III. 医学-英语-医学院校-教材  
IV. H31

中国版本图书馆 CIP 数据核字(2002)第 059290 号

基础医学英语

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出版发行 高等教育出版社

社 址 北京市东城区沙滩后街 55 号

邮政编码 100009

传 真 010-64014048

购书热线 010-64054588

免费咨询 800-810-0598

网 址 <http://www.hep.edu.cn>

<http://www.hep.com.cn>

经 销 新华书店北京发行所

印 刷 北京奥隆印刷厂

开 本 787×960 1/16

印 张 25.5

字 数 480 000

版 次 2002 年 10 月第 1 版

印 次 2002 年 10 月第 1 次印刷

定 价 28.80 元

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本书如有缺页、倒页、脱页等质量问题,请到所购图书销售部门联系调换。

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## 前 言

改革开放以来,随着我国对外交往和学术交流的不断深入,社会对专业技术人员的外语水平要求也越来越高。在这种形势下,我国对大学英语教学进行了一系列改革和创新,取得了很大成绩。但是应用提高阶段的专业英语尤其是医学专业英语的教学还很薄弱,其中一个重要原因是医学专业英语教材的改革和创新与时代的发展和需要极不适应。为了深化医学英语教学改革,使广大医学院校的本科生、研究生尽快掌握21世纪迫切需要的、在一定专业领域内以英语为工具进行信息交流的能力,根据教育部《大学英语教学大纲[修订本]》的要求,我们组织国内部分医学院校具有丰富教学经验的教授、专家编写了《21世纪大学医学英语》系列教材。

本系列教材在编写过程中注意突出时代性和实用性。选材充分注意到了反映最新的医学科技发展状况,体现现代医学理念,改变专业英语即是专业阅读这种单一的教学模式,兼顾了听、说、写、译诸方面的能力培养,安排了一系列适合语言运用能力提高的练习。本系列教材还特别注意了与大学英语四、六级教学要求的衔接,以利学生从大学英语基础阶段到应用提高阶段的专业英语的平稳过渡和提高。

本系列教材由《基础医学英语》、《临床医学英语》、《医学英语听与说》、《医学英语写作与翻译》四册组成。

本书为《基础医学英语》,共18课。每课由两部分组成:Section A为术语,Section B为两篇文章。书后附有练习答案,Passage A的译文和词汇表。

本册书的特色主要体现在以下两个方面:

一、不再沿袭“生物医学”的传统模式,按人体8大系统顺序组织教材,而是遵循生物学、心理学、社会学相结合的新的医学理念,不仅介绍一般生理结构与功能,更涉及基因医学、PCR技术、护理、社区医疗、心

理学等,甚至还兼顾了与科研密切相关的动物实验的相关内容。

二、突出医学英语构词法。医学英语词汇较其它专业有更大的特殊性,这种特殊性就是医学英语专业词汇多源于拉丁语和希腊语,使很多初学者感到记忆医学英语词汇困难至极。但是医学英语构词法很有概括性、规律性,一旦掌握了构词法便能事半功倍。使学生掌握一定的构词法是本教材的一个重要任务。考虑到学生主体是医学专业人员,不是语言专家,既要了解医学构词法,又不必过细,每单元的 Section A,均介绍 15 个与本课文相关的前、后缀,并配有相应练习,使学生在学构词法的过程中记忆词汇,在学习课文的过程中加深对构词法的掌握。

《21 世纪大学医学英语》

编委会

2002 年 7 月

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# Unit 1

## Section A Terminology

<i>stems and affixes</i>	<i>meaning</i>	<i>examples</i>	
arthr(o)-	关节	arthritis 关节炎	arthrodynia 关节痛
articul(o)-	关节	articular 关节的	articulation 关节
-blast	成...细胞	osteoblast 成骨细胞	erythroblast 成红细胞
calci(o)-	钙	calcemia 钙血症	calcipenia 钙质减少
carp(o)-	腕,腕骨	carpal 腕的	carpectomy 腕骨切除术
chondr(o)-	软骨	chondroblast 成软骨细胞	chondritis 软骨炎
-clast	破...细胞	osteoclast 破骨细胞	chondroclast 破软骨细胞
cost(o)-	肋骨	costochondral 肋软骨的	costectomy 肋骨切除术
crani(o)-	颅	cranial 颅的	cranioscopy 颅检查术
femor(o)-	股,股骨	femoral 股骨的	femorocele 股疝
myel(o)-	脊髓;骨髓	myeloma 骨髓瘤	myelitis 脊髓炎,骨髓炎
oste(o)-	骨	osteoma 骨瘤	osteodynia 骨痛
phalang(o)-	指;趾	phalangitis 指(趾)骨炎	phalangeal 指(趾)骨的
stern(o)-	胸骨	sternocostal 胸肋的	sternoid 胸骨样的
vertebr(o)-	椎骨	vertebral 椎骨的	vertebrectomy 椎骨切除术

## Exercises

I . Give the meaning for the following stems and affixes and provide one example for each.

<i>stems and affixes</i>	<i>meaning</i>	<i>example</i>
1. arthr(o)-	_____	_____
2. calci(o)-	_____	_____
3. cost(o)-	_____	_____
4. chondr(o)-	_____	_____
5. femor(o)-	_____	_____
6. oste(o)-	_____	_____
7. myel(o)-	_____	_____
8. stern(o)-	_____	_____

II . Choose the definition from Column B that best matches the stem or affix in Column A.

<i>Column A</i>	<i>Column B</i>
1. articul(o)-	a. skull
2. chondr(o)-	b. spinal cord; bone marrow
3. crani(o)-	c. to break
4. stern(o)-	d. cartilage
5. myel(o)-	e. breastbone
6. oste(o)-	f. joint
7. vertebr(o)-	g. bone
8. -clast	h. back bone

III . Translate the following into English.

1. 关节炎 \_\_\_\_\_
2. 成红细胞 \_\_\_\_\_
3. 破软骨细胞 \_\_\_\_\_
4. 颅检查术 \_\_\_\_\_
5. 股疝 \_\_\_\_\_
6. 骨髓瘤 \_\_\_\_\_

7. 胸肋的 \_\_\_\_\_

8. 椎骨切除术 \_\_\_\_\_

## Section B Passages

### Passage A

#### The Skeletal System

Without the skeletal system we would be unable to perform movements, such as walking or grasping. The slightest **jar** to the head or chest could damage the brain or heart. It would even be impossible to chew food. The framework of bones and cartilage that protects our organs and allows us to move is called the skeletal system.

#### Functions

- para 1** The skeletal system performs several basic functions.
- para 2** Support: The skeleton provides a framework for the body and, as such, it supports soft tissues and provides a point of attachment for many muscles.
- para 3** Protection: Many internal organs are protected from injury by the skeleton. For example, the brain is protected by the **cranial** bones, the spinal cord by the **vertebrae**, the heart and lungs by the rib cage, and internal reproductive organs by the pelvic bones.
- para 4** Movement: Bones serve as levers to which muscles are attached. When the muscles contract, the bones acting as levers produce movement.
- para 5** Mineral storage: Bones store several minerals that can be distributed to other parts of the body on demand. The principal stored minerals are calcium and **phosphorus**.
- para 6** Blood cell production: Red marrow in certain bones is capable of producing blood cells, a process called **hematopoiesis** or hemopoiesis. Red marrow consists of blood cells in immature stages, fat cells, and macrophages. Red marrow produces red blood cells, some white

blood cells, and **platelets**.

## Types of Bones

- para 1** Almost all the bones of the body may be classified into four principal types on the basis of shape: long, short, flat, and irregular. Long bones have greater length than width and consist of a **diaphysis** and a variable number of **epiphyses**. For example, **metacarpals**, **metatarsals**, and **phalanges** have only one epiphysis. The **femur** actually has four. Other long bones have two. Long bones are slightly curved for strength. A curved bone is structurally designed to absorb the stress of the body weight at several different points so the stress is evenly distributed.
- para 2** If such bones were straight, the weight of the body would be unevenly distributed and the bone would easily fracture. Examples of long bones include bones of the thighs, legs, toes, arms, forearms, and fingers.
- para 3** Short bones are somewhat cube-shaped and nearly equal in length and width. Their texture is **spongy** except at the surface, where there is a thin layer of compact bone. Examples of short bones are the wrist and ankle bones.
- para 4** Flat bones are generally thin and composed of two more or less parallel plates of compact bone enclosing a layer of spongy bone. Flat bones afford considerable protection and provide extensive areas for muscle attachment. Examples of flat bones include the cranial bones (which protect the brain), the **sternum** and ribs (which protect organs in the thorax), and the **scapulae**.
- para 5** Irregular bones have complex shapes and cannot be grouped into any of the three categories just described. They also vary in the amount of spongy and compact bone present. Such bones include the vertebrae and certain facial bones.
- para 6** There are two additional types of bones that are not included in this classification by shape. **Sutural** or **wormian bones** are small bones between the joints of certain cranial bones. Their number varies

greatly from person to person. **Sesamoid** bones are small bones in **tendons** where considerable pressure develops, for instance, in the wrist. These, like sutural bones, are also variable in number. Two sesamoid bones, the **patellas** (kneecaps), are present in all individuals.

## Bone Replacement

**para 1** Bones undergoing either **intramembranous** or **endochondral ossification** are continually **remodeled** from the time that initial calcification occurs until the final structure appears. Remodeling is the replacement of old bone tissue by new bone tissue. Compact bone is formed by the transformation of spongy bone. The diameter of a long bone is increased by the destruction of the bone closest to the marrow cavity and the construction of new bone around the outside of the diaphysis. However, even after bones have reached their adult shapes and sizes, old bone is perpetually destroyed and new bone tissue is formed in its place. A bone is never **metabolically** at rest; it constantly remodels and **reappropriates** its **matrix** and minerals along lines of **mechanical stress**.

**para 2** A bone shares with skin the feature of replacing itself throughout adult life. Remodeling takes place at different rates in various body regions. The **distal** portion of the femur (thigh bone) is replaced about every 4 months. By contrast, bone in certain areas of the **shaft** will not be completely replaced during the individual's life. Remodeling allows worn or injured bone to be removed and replaced with new tissue. It also allows bone to serve as the body's storage area for calcium. Many other tissues in the body need calcium in order to perform their functions. For example, a nerve cell needs calcium for nerve impulse conduction, muscle needs calcium to contract, and blood needs calcium to **clot**. The blood continually trades off calcium with the bones, removing calcium when it and other tissues are not receiving enough of this element and resupplying the bones with dietary calcium to keep them from losing too much bone mass.

- para 3** The cells believed to be responsible for the resorption (loss of a substance through a physiological or pathological process) of bone tissue are **osteoclasts**. In the healthy adult, a delicate **homeostasis** is maintained between the action of the osteoclasts in removing calcium and the action of the bone-making osteoblasts in depositing calcium. Should too much new tissue be formed, the bones would become abnormally thick and heavy. If too much calcium is deposited in the bone, the surplus may form thick bumps, or **spurs**, on the bones that interfere with movement at joints. A loss of too much tissue or calcium weakens the bones and allows them to break easily or to become very flexible. A greatly accelerated remodeling process results in a condition called **Paget's disease**.
- para 4** In the process of resorption, it is believed that **osteoclasts** send out projections that secrete protein-digesting enzymes released from **lysosomes** and several acids (**lactic** and **citric**). The enzymes may function by digesting the collagen and other organic substances, while the acids may cause the bone salts (minerals) to dissolve. It is also presumed that the osteoclastic projections may **phagocytose** whole fragments of collagen and bone salts. **Magnesium** deficiency inhibits the activity of osteoclasts.
- para 5** Normal bone growth in the young and bone replacement in the adult depend on several factors. First, sufficient quantities of calcium and phosphorus, components of the primary salt that makes bone hard, must be included in the diet. **Manganese** may also be important in bone growth. It has been shown that manganese deficiency significantly inhibits laying down new bone tissue.
- para 6** Second, the individual must obtain sufficient amounts of vitamins, particularly vitamin D, which participates in the absorption of calcium from the **gastrointestinal** tract into the blood, calcium removal from bone, and kidney reabsorption of calcium that might otherwise be lost in urine.
- para 7** Third, the body must manufacture the proper amounts of the hormones responsible for bone tissue activity. **Growth hormone** (GH),

secreted by the **pituitary** gland, is responsible for the general growth of bones. Too much or too little of this hormone during childhood makes the adult abnormally tall or short. Other hormones specialize in regulating the osteoclasts. **Calcitonin** (CT), produced by the **thyroid** gland, inhibits osteoclastic activity and accelerates calcium absorption by bones, while **parathormone** (PTH), synthesized by the **parathyroid glands**, increases the number and activity of osteoclasts. PTH also releases calcium and **phosphate** from bones into blood, transports calcium from urine into blood, and transports phosphate from blood into urine. And still others, especially the sex hormones, aid osteoblastic activity and thus promote the growth of new bone. The sex hormones act as a double-edged sword. They aid in the growth of new bone, but they also bring about the degeneration of all the cartilage cells in epiphyseal plates. Because of the sex hormones, the typical adolescent experiences a spurt of growth during puberty, when sex hormone levels start to increase. The individual then quickly completes the growth process as the epiphyseal cartilage disappears. Premature puberty can actually prevent one from reaching an average adult height because of the simultaneous premature degeneration of the plates.

### **Aging and the Skeletal System**

- para 1** There are two principal effects of aging on the skeletal system. The first effect is the loss of calcium from bones. This loss usually begins after age 40 in females and continues thereafter until as much as 30 percent of the calcium in bones is lost by age 70. In males, calcium loss typically does not begin until after age 60. The loss of calcium from bones is one of the factors related to a condition called **osteoporosis**.
- para 2** The second principal effect of aging on the skeletal system is a decrease in the rate of protein formation that results in a decreased ability to produce the organic portion of bone matrix. As a consequence, bone matrix accumulates a lesser proportion of organic ma-

trix and a greater proportion of inorganic matrix. In some elderly individuals, this process can cause their bones to become quite **brittle** and more susceptible to fracture.

## ***New Words and Phrases***

jar [dʒɑ:] <i>n.</i>	震动
cranial ['kreinjəl] <i>a.</i>	颅的, 颅侧的
vertebra ['vɜ:tibrə] ( <i>pl. vertebrae</i> ) <i>n.</i>	椎骨, 脊椎
phosphorus ['fɒsfərəs] <i>n.</i>	磷
hematopoiesis [hi:mətəu'pɔi'esis] <i>n.</i>	血细胞生成, 造血
platelet ['pleitlit] <i>n.</i>	血小板
diaphysis [dai'æfisis] ( <i>pl. diaphyses</i> ) <i>n.</i>	骨干
epiphysis [i'pifisis] ( <i>pl. epiphyses</i> ) <i>n.</i>	(骨) 骺, 松果体
metacarpal [i,tə'kɑ:pəl] <i>n.</i>	掌骨
<i>a.</i>	掌的
metatarsal [i,kmetə'tɑ:səl] <i>n.</i>	跖骨
<i>a.</i>	跖的
phalanx ['fælæŋks] ( <i>pl. phalanges</i> ) <i>n.</i>	指骨; 趾骨
femur ['fi:mə] ( <i>pl. femurs or femora</i> ) <i>n.</i>	股骨, 股
spongy ['spʌndʒi] <i>a.</i>	海绵状的; 多孔的
sternum ['stɜ:nəm] ( <i>pl. sternums or sterna</i> ) <i>n.</i>	胸骨
scapula ['skæpjulə] ( <i>pl. scapulae</i> ) <i>n.</i>	肩胛(骨)
sutural ['sju:tʃərəl] <i>a.</i>	骨缝的
wormian bones <i>n.</i>	缝间骨
sesamoid ['sesəmoid] <i>a.</i>	籽样的
tendon ['tendən] <i>n.</i>	腱
patella [pə'telə] <i>n.</i>	髌(骨)
intramembranous [i,ntrə'membrənəs] <i>a.</i>	膜内的
endochondral [i,endəu'kɒndrəl] <i>a.</i>	软骨内的; 软骨内形成的
ossification [ɒsifi'keifən] <i>n.</i>	骨化, 沉钙(作用)
remodel [ri'mɒdl] <i>v.</i>	重建
metabolically [metə'bɒlikəli] <i>ad.</i>	在代谢方面
reappropriate [riə'prəupriit] <i>v.</i>	重新调整



matrix [ˈmeɪtrɪks] ( <i>pl.</i> matrices or matrixes) <i>n.</i>	基层, 基质
mechanical [miˈkænikəl] <i>a.</i>	机械的
stress [stres] <i>n.</i>	应力
distal [ˈdɪstl] <i>a.</i>	远侧的; 末梢的
shaft [ʃɑ:ft] <i>n.</i>	干, 体
clot [klɒt] <i>v.</i>	凝固
osteoclast [ˈɒstiəklæst] <i>n.</i>	破骨细胞
homeostasis [ˌhəʊmiəʊˈsteɪsɪs] <i>n.</i>	体内平衡, 自身稳定(功能)
spur [spɜ:] <i>n.</i>	骨刺
Paget's disease	佩吉特病(变形性骨炎)
osteoblast [ˈɒstiəblæst] <i>n.</i>	皮骨细胞
lysosome [ˈlaɪsəʊsəm] <i>n.</i>	溶酶体
lactic acid	乳酸
citric acid	枸橼酸, 柠檬酸
phagocytose [ˌfæɡəʊˈsaɪtəʊs] <i>v.</i>	吞噬
magnesium [mæɡˈni:zjəm] <i>n.</i>	镁
manganese [mæŋɡəˈnɪz] <i>n.</i>	锰
gastrointestinal [ˌɡæstrəɪnɪˈtestɪnəl] <i>a.</i>	胃肠的
growth hormone	生长激素
pituitary [piˈtju:ɪtəri] <i>a.</i>	垂体的
<i>n.</i>	垂体
calcitonin [ˌkælsiˈtəʊnɪn] <i>n.</i>	(甲状腺)降钙素
thyroid [ˈθaɪrɔɪd] <i>a.</i>	甲状腺的
<i>n.</i>	甲状腺
parathormone [ˌpærəˈθɔ:məʊn] <i>n.</i>	甲状旁腺激素
parathyroid gland	甲状旁腺
phosphate [ˈfɒsfeɪt] <i>n.</i>	磷酸盐
osteoporosis [ˌɒstiəʊpəˈreʊsɪs] <i>n.</i>	骨质疏松(症)
brittle [brɪtl] <i>a.</i>	易碎的, 脆的

## Exercises

### I . Answer the following questions.

1. What are the functions of the skeletal system?