MEDICINE

Developing Reading Skills in English

Luke Prodromou

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ENGLISH LANGUAGE TEACHING

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Introduction

This book, which is one of a series, is intended for students of medicine whose mother tongue is not English but who need an adequate reading ability in English in order to help them in their studies.

The texts

The texts have been chosen to offer a broad range of language and topics within the limits of the subject. All the texts are authentic, and are roughly at the same level of difficulty; they have not been altered or simplified. They are drawn from a variety of sources; textbooks, magazines, newspapers, and aim to meet immediate needs in terms of the student's academic interests but at the same time to stimulate the student by taking a wider perspective on medicine. In most cases the medical content of the texts is elementary (endocrine system, proteins, blood flow), allowing the student to focus on the language of medicine without having to worry about the subject. On the other hand, experience has shown that if students are not stimulated by the content of their English texts they lose interest in the language too. Thus, I have included extracts on cancer, the brain and genetics drawn from newspapers and magazines. It must nevertheless be understood that this book does not aim to teach the subject of medicine, but language useful in the study of medicine.

The exercises

The exercises are designed to develop the skill of reading rather than to test reading. It is therefore important to go through the exercises carefully rather than just try and find the "right answer" to questions. Above all, you are encouraged to read purposefully. You are not required to just look at the words on the page, but to read and complete the task, e.g. searching for specific information, completing a table or diagram, matching words or sentences. You will be a more confident and faster reader if you read for something. The exercise are roughly of three types:

1. Those designed to encourage purposeful reading and thus help you to read faster.
2. Those designed to develop and extend your understanding of the details of the text.

3. Production exercises which make use of the language and ideas in a reading text and thus reinforce the reader's overall competence.

Exercise types

In category 1 you will find prediction exercises which draw on knowledge you may already have and thus make the text you then read more interesting and easier. There are scanning exercises where you are asked to find a specific word or idea in the text; there are also information transfer exercises where, on the basis of information in the text, you label a diagram or fill in a table.

In category 2 you will focus more closely on vocabulary, grammar and the way sentences and paragraphs are linked. Here you will find matching exercises, blank-filling, completion and re-ordering exercises.

Category 2 involves the writing of summaries and expansion of notes to reinforce what you have read.

How to use the book

First, do <u>not</u> start reading the text trying to understand every word. You will waste time and feel frustrated. Look at the pre-question first; think about the words or tasks found <u>before</u> each text and do not worry about knowing all the answers. The pre-question is not a test, but a way of giving you something to think about and look for in the text. When you read to answer the pre-question, look only for relevant information and ignore what you do not understand; the tasks which follow the text will help you with the difficulties step-by-step. Consult the key only when you have first checked your answers with the text. Even when you think you know the answer to a question, find the place in the text and give line references whenever required; where you are asked to take notes you should do so, not just "find the answer". The actual reading should always be silent. The teacher may occasionally read a text aloud while students do the exercise for the sake of variety, but in the main, for the student, reading is a personal and silent procedure.

Classwork

Where the book is being used with a class, the teacher should encourage students to work in pairs or small groups, depending on the type of exercise. Searching the text for information is of course an exercise for the individual, while completing a table may be done in pairs. If you want students to communicate orally, simply ask them to

do half a task by reading and then exchanging information with their partner to complete the task. The teacher should encourage students to guess, predict, give evidence from the text, discuss their answers with each other, and thus make reading an active process.

The student alone

The material in this book is suitable for the student working alone and can be used for unsupervised study. In such cases, it is imperative to use the key in a constructive way—as a last resort!

The answer key

A complete set of answers to the exercises is provided. Often there is no "right" answer, the task being to read in order to find a word or check predictions. Where there is more than one answer, alternatives are given. To make full use of the key the student should constantly consult the text, examining it until the reason for the right answer becomes apparent. In class, the correction of exercises should not be hurried; adequate time for text-searching and discussion should be allowed. Disagreement over answers should be encouraged. Avoid a "ticks and crosses" approach to checking learning.

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Contents

UNIT 1

The Endocrine System

1.1 *Read the text and complete the following table:*

	Gland	Hormone	Feature 1	Feature 2	Feature 3
Male	testis				
Female			development of breasts		

The endocrine system—that is, the ductless glands and their hormones—affects almost all the important functions of the body, including growth, reproduction, nutrition, protection against disease and adaptation to different conditions.

In the male reproductive endocrine system, the crucial endocrine glands are the pituitary gland and the testis. The testis has two main functions, to produce sperm cells and to secrete the male sex hormones, or androgens, which are responsible for all the secondary sex characteristics of the male. The beard and chest hair, the deep voice and the larger bones and muscles which appear at puberty, change the boy into a man. The amount of androgen secreted is controlled by the amount of the appropriate stimulating hormone secreted by the pituitary gland—which in turn is controlled by the brain as well as the amount of androgen already present in the blood.

Female reproduction, also controlled by the endocrine system, is rather more complex than that of the male. Not only do some of the secondary sexual characteristics which distinguish the mature woman from the girl depend on hormones, but so also do the cycles of menstruation and pregnancy.

The most important hormones are the oestrogens produced by the ovaries, which, as well as being egg factories, are also ductless glands. At puberty oestrogens cause the development of the breasts, the beginning of menstruation, the gradual change in shape as the pelvic bones get larger (to provide more room for any future baby), as well as the development of armpit and pubic hair and of the vagina and its associated reproductive organs.

It is not known what mechanism sets off these changes, but the mysterious biolcgical clock is involved. The brain causes the pituitary gland to produce stimulating hormones, in this case called gonado-

trophins, which in turn cause the ovaries to produce oestrogens and another hormone, progesterone.

The pattern becomes remarkably complicated here. In the course of every monthly menstrual cycle, an egg is prepared and released by one of the ovaries and at the same time the lining of the uterus is made ready to receive the egg if it should be fertilized. The usual pattern is that the pituitary sends a stimulating hormone (called FSH) to the ovaries, which produce oestrogen in response, and the level of oestrogen in the blood builds up until it reaches a certain critical level.

At this point the pituitary is triggered off to produce a new stimulating hormone (LH). This causes one of the ovaries to release an egg (ovulation) and makes both ovaries cut down on their production of oestrogens and switch over to the production of progesterone.

[From: *Mind Alive* © Marshall Cavendish Ltd, 1968/9]

EXERCISES

1.2 *Put the following notes in the correct order (the first one has been done for you).*

(a) Male Reproductive System

Androgens determine male characteristics	
Pituitary secretes hormone	
Brain controls pituitary gland	1
Hormone controls amount of androgen	
Testis secretes androgens	

(b) The Menstrual Cycle

Ovaries release egg	
Pituitary produces LH	
Uterus receives egg	
Lining of uterus prepared	
Ovaries switch over to progesterone	
Ovaries reduce oestrogen	
Pituitary sends FSH to ovaries	1
Level of oestrogen builds up	
Ovaries produce oestrogen	

1.3 *Make pairs of words with a similar meaning from the following list:*

stimulate, crucial, complex, trigger off, build up, critical, complicated, purpose, growth, determine, development, control, during, reduce, in the course of, cut down, function, increase.

1.4 *Complete the following table wherever possible:*

	Adjective	Verb	Noun
(a)	fertile		fertilization
(b)		protect	
(c)			reception
(d)		stimulate	
(e)	characteristic		
(f)		secrete	
(g)			production
(h)		involve	
(i)	menstrual		
(j)		depend	

1.5 *Complete the last column in the table below:*

(a) (b) (c) (d)	sperm cells androgens oestrogens gonadotrophins	are	produced by	the testis
(e) (f) (g)	The amount of androgen The pituitary gland Female production	is	controlled by	

1.6 *Make the sentences in the previous exercise active: e.g. the testis produces sperm cells.*

1.7 *Summarize the text, orally or in writing, using the tables in Exercises 1.1 and 1.2 above.*

UNIT 2

Proteins

2.1 *Which of the following words do you think will be in the text? Why?*

substance, combination, molecule, essential, important.

Read the text quickly to check your guesses:

A protein is a food substance composed of building blocks called amino acids. There are 22 naturally occurring amino acids in food, and they differ from each other in size and chemical structure. A protein is formed by a combination of amino acids arranged in a pattern something like a long word made from a combination of letters. However, some protein "words" formed by amino acids are of tremendous size and use hundreds or thousands of amino acids in a particular pattern. A protein molecule also may contain mineral elements in its amino acid pattern. An example is haemoglobin, the red colouring factor of blood cells; haemoglobin is a protein made up of amino acids and iron atoms.

Of the 22 amino acids, nine are designated essential amino acids that must be included in your diet on a regular basis in order to maintain normal health. The 13 other amino acids are important, but they can be built by the body's chemical processes from other foods, whereas the body is unable to fabricate essential amino acids. Because the body cannot function normally without the essential amino acids in the daily diet, proteins that are sources of essential amino acids are considered better than proteins that lack them.

A *complete* protein contains all nine of the essential amino acids—for example, milk and eggs. Gelatin, on the other hand, contains only seven of the essential amino acids, and while it is almost pure protein, gelatin is not a complete protein.

A complete protein can be lost if it isn't prepared for the table in a proper manner. Some amino acids are destroyed by high cooking temperatures, or they can be rendered indigestible by cooking them in oil rather than water. A complete protein food fried in fat at high temperatures can be a wasted food because the amino acid molecules are converted to chemical compounds that cannot be absorbed or utilized by the human body.

After milk and eggs, the best sources of proteins with a high pro-

portion of essential amino acids are meats, fish and poultry. Some vegetables and grains contain a few of the essential amino acids, but they have to be used in the diet in a skilful way if you are a person who subsists entirely on a vegetarian diet that is not supplemented by milk and eggs. For example, beans and corn each contain some of the essential amino acids, but neither beans nor corn contain all the essential amino acids found in some other plant foods. So vegetarian diets need a combination of corn and beans in order to provide most of them.

[From: *Newsweek Encyclopedia of Family Health and Fitness*, 1980]

EXERCISES

2.2 *What do the following numbers refer to in the text?*

22_____ 9_____ 13_____

2.3 *Add the following words to the box below:*

gelatin, eggs, beans, corn, milk, meat, fish, poultry.

Essential Amino Acids

nine	e.g. eggs
seven	
a lot	
a few	

2.4 *Name two ways in which essential and important amino acids differ:*

(a) _____ (b) _____.

2.5 *Make as many correct sentences as you can by matching items from the columns in the table below:*

A protein	is	composed	of	a few essential amino acids
Corn	is	made up	of	the 9 essential amino acids
A complete protein		consists	of	7 of the essential amino acids
Gelatin		includes		amino acids and iron atoms
Haemoglobin		contains		a combination of amino acids
A healthy diet				amino acids

2.6 *Now expand the notes below to make sentences like those in the table in the previous exercise:*

(a) All foods (calories) (b) Protein molecule (mineral elements) in its amino acid pattern (c) Molecule of DNA (chain with four links) (d) Body (cells) (e) Saliva (ptyalin) (f) Body (thousands of different kinds of protein).

2.7 *Fill in the blanks in the following sentences using:* may, can, can't *or* must.

(a) A protein molecule _____ contain mineral elements in its amino acid pattern.
(b) The nine essential amino acids _____ be included in a healthy diet.
(c) The 13 important amino acids _____ be built by the body's chemical processes.
(d) A complete protein _____ be lost if it isn't cooked properly.
(e) The body _____ fabricate essential amino acids.

2.8 *Connect the following sentences using the expressions:* however, on the other hand, for example.

1.(a) Vegetarian diets may contain most amino acids.
(b) A good vegetarian diet may lack three essential amino acids.
2.(a) Some vegetables have to be used in a diet in a skilful way.
(b) Beans and corn do not contain all the essential amino acids.
3.(a) A complete protein can be lost if it is not prepared properly.
(b) High cooking temperatures destroy some amino acids.
4.(a) A complete protein contains all nine of the essential amino acids.
(b) Milk and eggs are complete proteins.
(c) Gelatin contains only seven of the essential amino acids.
5.(a) Gelatin is not a complete protein.
(b) If served with milk the dessert becomes a complete protein.
6.(a) A protein molecule may contain mineral elements in its amino acid pattern.
(b) Haemoglobin is a protein made up of amino acids and iron atoms.
7.(a) The essential amino acids must be included in a healthy diet.
(b) The other amino acids are important but can be built by the body's chemical processes.

2.9 *Which words in the text mean something like:*

(a) be without	(b) changed into	(c) make, produce
(d) made up of	(e) element	(f) described as
(g) made use of	(h) lives on	

2.10 *Write a summary of the text using the information in Exercises 2.2–2.5*

UNIT 3

Mechanics of Breathing

3.1 *Read the following text and list all the muscles mentioned:*

(a) .....

(b) .....

(c) .....

(d) .....

The most important muscle of inspiration is the diaphragm. This consists of a thin dome-shaped sheet of muscle which is inserted into the lower ribs. It is supplied by the phrenic nerve. When it contracts, the abdominal contents are forced downward and forward and the vertical dimension of the chest cavity is increased. In addition the rib margins are lifted and moved out, causing an increase in the transverse diameter of the thorax.

In normal tidal breathing, the level of the diaphragm moves about 1 cm or so, but on forced inspiration and expiration, a total excursion of up to 10 cm may occur. When the diaphragm is paralyzed, it moves up rather than down with inspiration because the intrathoracic pressure falls. This is known as paradoxical movement and can be demonstrated at fluoroscopy when the subject sniffs.

The external intercostal muscles connect adjacent ribs and slope downward and forward. When they contract, the ribs are pulled upward and forward, causing an increase in both the lateral and anteroposterior diameters of the thorax. The lateral dimension increases because of the "bucket-handle" movement of the ribs. The intercostal muscles are supplied by intercostal nerves which come off the spinal cord at the same level. Paralysis of the intercostal muscles alone does not seriously affect breathing because the diaphragm is so effective.

The accessory muscles of inspiration include the scalene muscles which elevate the first two ribs and the sternomastoids which raise the sternum. There is little if any activity in these muscles during quiet breathing, but during exercise they may contract vigorously. Other muscles which play a minor role include the alae nasi, which cause flaring of the nostrils, and small muscles in the neck and head.