

Classes 9 - 10

Topic: The Cardiovascular System

Grammar: Passive Voice: Simple Tenses

Употребление английского глагола в страдательном залоге:

В английском языке глаголы могут иметь два залога: действительный (the Active Voice) и страдательный (the Passive Voice).

Глагол в действительном залоге показывает, что действие выполняется лицом или предметом, обозначенным подлежащим.

Глагол в страдательном залоге показывает, что лицо или предмет, обозначенный подлежащим, испытывает воздействие или находится в определенном состоянии в результате какого-либо воздействия. Функции страдательного залога в английском языке гораздо шире, чем в русском языке.

Страдательный залог образуется в английском языке с помощью вспомогательного глагола *be* и формы причастия II смыслового глагола:

be + Participle II

Форма причастия **II** никогда не изменяется, а показателем лица, числа и времени является вспомогательный глагол ***be***.

В английском языке в страдательном залоге употребляются также глаголы, требующие после себя предлога. Предлог сохраняется в этом случае после глагола и уточняет лексическое значение глагола:

- He doesn't like to be laughed ***at***.
- She can be relied ***on***.

Рассмотрим следующие примеры:

1. Сравните предложения с действительным и страдательным залогом:

В действительном залоге:

- The students carry out many experiments.
- We wrote a test in Latin last Friday.

В страдательном залоге:

- Many experiments ***are carried out*** by our researchers.
- The test in Latin ***was written*** last Friday.

2. В страдательном залоге агент действия часто неизвестен либо информация о нем не важна в ситуации, о которой идет речь:

- He ***was told*** some interesting news. (somebody told him, but we don't know who)
- ***Is*** this ward ***cleaned*** every day? (***Does*** somebody clean it? – ***It's*** not important who)

3. Для построения предложения в страдательном залоге во временах группы Simple Passive используется глагол ***to be*** в соответствующей временной форме + **Participle II**:

(be) done (be) cleaned (be) damaged (be) built (be) seen etc.

Помните, что в английском языке глаголы делятся на правильные и неправильные. У правильных глаголов Participle II имеет окончание **–ed**, а неправильные глаголы имеют свою форму (**3-я форма глагола**), которую следует знать: *cleaned/damaged; **built/done/seen***.

Present Simple Active: Careless driving causes many accidents.

Present Simple Passive: Many accidents ***are caused*** by careless driving.

Past Simple Active: A loud noise woke us up during the night.

Past Simple Passive: We ***were woken*** up by a loud noise during the night.

Future Simple Active: We will ask him to explain the situation.

Future Simple Passive: He ***will be asked*** to explain the situation.

4. В предложениях с пассивным залогом предлог **by** вводится, чтобы показать, кем или чем выполняется действие:

- The first book on human anatomy was written **by** Andreas Vesalius.

Предлог **with** в предложении вводит средство выполнения действия:

- The letter is written **with** a pen.

Для образования **вопросительной формы** пассивного предложения (общий вопрос) глагол **to be (am /is /are)** выносится **на первое место**.

- Are the mistakes corrected?
- Is he injured?

Для образования **отрицательной формы** пассивного предложения к глаголу **to be** прибавляется отрицательная частица **not**:

- The mistakes are not corrected.
- He is not injured.

Task 1. Translate the following pairs of sentences. Define whether the predicate is used in active or passive:

1. The pulmonary artery divides into two branches.
The upper extremity is divided into the shoulder, the upper arm, the forearm and the hand.
2. The right carotid artery distributes blood to all parts of the right side of the neck, face, head and brain.
The blood from the aorta is distributed throughout the body.
3. All the vertebrae compose the spinal column or the spine.
The cervical part of the spine is formed by seven cervical vertebrae.
4. The bones of the skeleton are connected by joints or by cartilages and ligaments.
Bones consist of organic and inorganic substance.
5. The skull is composed of twenty-six bones.
These bones form two basic parts of the skull, that is, facial and cranial parts.
6. All the muscles are divided into three basic groups: long, short and wide muscles.
Long, short and wide muscles form three basic groups.

Task 2. Give three forms of the verbs:

To ask, to use, to work, to enter, to speak, to found, to try, to study, to know, to be, to consist, to translate, to come, to write, to meet, to administer, to examine, to think, to begin, to become, to apply, to include, to go, to get, to take, to discuss, to do, to make, to test, to put, to occur, to give, to feel, to fall, to attend, to find, to tell, to say, to see, to hear.

Task 3. Put the verbs given in brackets into Present Simple Passive Voice:

1. The instruments (to sterilize) before the operation.
2. All wards in the hospital (to clean) every day.
3. Clinical subjects (to study) in senior years.
4. Respiratory infections (to cause) by viruses and bacteria.
5. Lectures in Anatomy (to deliver) on Mondays.
6. Muscles (to attach) to bones by ligaments.
7. The skeleton (to make) up of bones.
8. The course of training (to divide) into preclinical and clinical courses.
9. The State Exam (to take) at the end of the course.
10. The instruction (to give) through lectures and practical classes.

Vocabulary & Speaking

Task 4. a) Study the following nouns:

aorta	– аорта	exit	– выход
arteriole	– артериола	leucocyte	– лейкоцит
artery	– артерия	platelet	– пластинка крови
atrium	– предсердие	septum	– перегородка
blood	– кровь	thrombocyte	– тромбоцит
branch	– ветвь	valve	– клапан
capillary	– капилляр	vein	– вена
chamber	– камера	ventricle	– желудочек
entrance	– вход	vessel	– сосуд
erythrocyte	– эритроцит	volume	– объем; емкость

b) Study the following adjectives:

colourless	– бесцветный	hollow	– пустой, полый
cone-shaped	– конусообразный	triangular	– треугольный

c) Study the following verbs:

to receive	– получать	to continue	– продолжать
to take away	– выводить	to average	– равняться в
to dilate	– расширять(ся)		среднем

d) Study the following adverb:

simultaneously	– вместе, одновременно, совместно
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e) Study the following anatomical terms:

blood circulation – кровообращение

tricuspid valve – трёхстворчатый клапан

mitral valve – митральный клапан сердца

atrioventricular valve – атриовентрикулярный, предсердно-желудочковый

semilunar valve – полулунный клапан сердца

pulmonary circulation – малый (легочный) круг кровообращения

circulatory system – система кровообращения

cardiovascular system – сердечно-сосудистая система

corpuscular elements – форменные элементы крови

circulating and non-circulating volume – циркулирующий и депонированный объем крови

red/white blood cells – красные/белые кровяные клетки

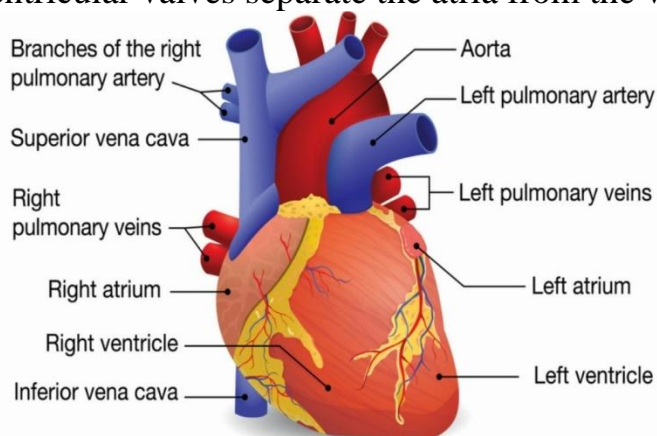
colouring substance – красящее вещество

Task 5. Read and translate the following text:

The Cardiovascular System

The cardiovascular system is the system of blood circulation. By the cardiovascular system we mean the heart, the arteries, the veins and capillaries of the human body. The centre of the circulatory system is the heart. The human heart is a cone-shaped organ. It lies in the thoracic cavity, just behind the breastbone and between the lungs. The heart is a hollow muscular organ included in the pericardium. The base of the heart is against the third rib. Its apex is against the interspace between the fifth and the sixth costal cartilages. The weight of the heart is about 300 grams (g) in the male and about 220 g in the female.

The heart consists of two separate chambers divided by the septum. Each of the chambers has two connected parts: the atrium and the ventricle. The atrioventricular valves separate the atria from the ventricles.



The right atrium is larger than the left one. The right ventricle is triangular in shape and has thick walls. The left ventricle is longer and more conical than the right one. The valves are located at the entrance and exit of each ventricle. In the left chamber the atrium and ventricle are separated by the mitral valve. In the right chamber the atrium and ventricle are separated by the tricuspid valve. At the point of origin of the aorta in the left

ventricle another valve is located. This valve is called the aortic semilunar valve. At the point of origin of the pulmonary artery in the right ventricle the fourth valve is located. It is called the pulmonary semilunar valve.

The muscular structure of the heart consists of fibrous bands divided into two groups – the first ones are the fibrous bands of the atria and the second ones are the fibrous bands of the ventricles.

The vessels carrying blood to and from the tissues of the body compose the systemic circulation. The pulmonary circulation is formed by vessels carrying blood to and from the lungs. The portal system is formed by veins passing to the liver.

Most of the arteries are composed of three coats. The arteries dilate and contract simultaneously with the action of the heart. Arteries receive blood from the ventricle and take it away from the heart and towards other organs. The pulmonary artery divides into two – one branch leads to the right lung, the other – to the left one. The arteries continue to divide and subdivide and form smaller and smaller vessels. The smallest arteries are the arterioles and these finally divide into capillaries.

The blood is a red fluid composed of plasma and corpuscular elements which are red blood cells or erythrocytes, white blood cells or leucocytes and blood platelets or thrombocytes. The most important part of the red cell is its red colouring substance or hemoglobin which on an average constitutes about 36% of its mass.

The total blood volume is divided into circulating and non-circulating volume. The average human blood volume is not less than 7.5% but not more than 10% of the body weight. The circulating volume averages less in the females than in the males.

Home Assignment:

Task 6. Answer the questions and speak about the cardiovascular system:

- 1.** What do we mean by the cardiovascular system?
- 2.** What organ is the centre of the circulatory system?
- 3.** Where does the heart lie?
- 4.** What type of organ is the heart? What does it look like?
- 5.** Where is the apex of the heart located?
- 6.** What parts does the heart consist of?
- 7.** What separates the atria from the ventricles?
- 8.** What valve separates the atrium and ventricle in the left chamber?
- 9.** What valve separates the atrium and ventricle in the right chamber?
- 10.** Where is the aortic semilunar valve located?
- 11.** Where is the pulmonary semilunar valve located?
- 12.** What vessels is the pulmonary circulation formed by?
- 13.** What veins is the portal system formed by?
- 14.** How do the arteries work? What is the function of the arteries?
- 15.** What is the function of blood vessels? How do they work?
- 16.** What are the smallest arteries in the body?

17. What does the blood consist of?
18. What is the most important part of the red blood cell?

Task 7. Use the verbs in brackets in the appropriate form (Present Simple Active or Passive) to complete the sentences.

1. Doctors (to use) laser in different fields of medicine.
2. Sometimes ulcers (to treat) surgically.
3. The period of recovery (to reduce) due to the use of a laser method.
4. Lasers (to use) in gastroenterology now.
5. The experimental findings (to show) the effectiveness of a new method.
6. The first experimental findings (to show) the possibility to speed the cure of ulcers.
7. Laser treatment (to speed) the cure of ulcers.
8. Haemorrhage (to stop) due to the use of a laser.
9. Polyps (to remove) surgically.
10. The hospital (to surround) by a large park.