

HEART AND CARDIOVASCULAR SYSTEM

Rayimqulova Sakinabonu Rabbimkulovna¹¹ Samarkand State Medical University, 1st year
student of the Faculty of stomatology

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This article explores the anatomy and physiology of the heart and cardiovascular system. It describes the heart's structure, the process of blood circulation, and the essential role of the cardiovascular system in sustaining life. It also discusses common cardiovascular diseases, preventive strategies, and the significance of a healthy lifestyle for heart health.

INTRODUCTION. The human heart and cardiovascular system are fundamental to life. As the central component of the circulatory system, the heart pumps blood through a vast network of blood vessels, supplying oxygen and nutrients to the body's cells and removing waste products. The cardiovascular system also plays a crucial role in temperature regulation, immune response, and hormonal transport. Understanding the structure and function of the heart is not only essential for medical professionals but also for anyone concerned about their health, as cardiovascular diseases remain the leading cause of death worldwide.

Main body:**1. Structure of the heart**

The heart is a muscular, cone-shaped organ located in the thoracic cavity, between the lungs. It weighs about 250–350 grams and is roughly the size of a fist. The heart is divided into four chambers: two atria (upper chambers) and two ventricles (lower chambers).

The heart wall is composed of three layers:

- **Endocardium** (inner layer)
- **Myocardium** (middle muscular layer)
- **Epicardium** (outer layer)

The heart contains four main valves:

- **Tricuspid valve** (between right atrium and right ventricle)
- **Pulmonary valve** (between right ventricle and pulmonary artery)
- **Mitral valve** (between left atrium and left ventricle)
- **Aortic valve** (between left ventricle and aorta)

These valves ensure that blood flows in one direction and prevent backflow.

2.Function of the cardiovascular system

The cardiovascular system is responsible for transporting blood, oxygen, hormones, nutrients, and waste products throughout the body. It consists of the heart, arteries, veins, and capillaries.

There are two main circuits:

- **Pulmonary circulation:** carries deoxygenated blood from the right ventricle to the lungs and returns oxygenated blood to the left atrium.
- **Systemic circulation:** delivers oxygenated blood from the left ventricle to the entire body and returns deoxygenated blood to the right atrium.

3.Common cardiovascular diseases

Cardiovascular diseases (CVDs) are a group of disorders affecting the heart and blood vessels. The most common include:

- **Hypertension (High Blood Pressure):** increases strain on the heart and arteries.
- **Coronary Artery Disease (CAD):** caused by atherosclerosis, leading to reduced blood flow to the heart.
- **Heart Attack (Myocardial Infarction):** occurs when blood supply to part of the heart is blocked.
- **Stroke:** happens when blood supply to the brain is interrupted or reduced.
- **Heart Failure:** the heart cannot pump blood efficiently.

4.Prevention and Healthy Lifestyle

Preventive care and healthy habits play a vital role in reducing cardiovascular risk. Key strategies include:

- **Healthy diet:** Rich in fruits, vegetables, whole grains, and lean proteins. Avoid saturated fats, excessive salt, and sugars.

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- **Regular exercise:** At least 150 minutes of moderate-intensity aerobic activity per week.

- **No smoking:** Tobacco use greatly increases the risk of heart disease.
- **Weight management:** Maintain a healthy body mass index (BMI).
- **Stress control:** Chronic stress contributes to heart problems.
- **Regular check-ups:** Monitor blood pressure, cholesterol, and glucose levels.

Conclusion: The heart and cardiovascular system are essential for sustaining life and overall health. With an increase in sedentary lifestyles and poor dietary habits, cardiovascular diseases have become more prevalent. Therefore, understanding the structure and function of the heart, recognizing the risks, and taking proactive steps toward prevention are critical.

Recommendations:

- Incorporate physical activity into daily life.
- Follow a balanced and heart-healthy diet.
- Avoid smoking and limit alcohol consumption.
- Get regular health screenings and manage chronic conditions.
- Educate the public on cardiovascular health starting from a young age.

By adopting these simple lifestyle changes, individuals can significantly reduce their risk of heart disease and live longer, healthier lives.

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