

# The Cardiac Cycle

## Introduction

The **cardiac cycle** is the process that happens when the **heart beats**. During this cycle, the heart **fills with blood** and then **pumps blood** to the body. This process is very important because it allows **oxygen and nutrients** to reach all organs. The cardiac cycle repeats many times every day and keeps the body alive.

The heart works like a **pump**. It has **four chambers**: two atria and two ventricles. These chambers work together in a specific order to move blood correctly. Each heartbeat includes different **phases**, and all of them are part of the cardiac cycle.

## Structure of the Heart

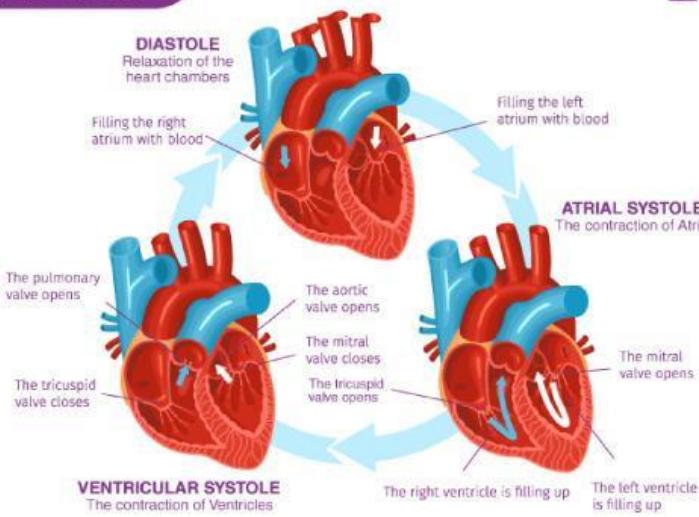
The heart has **four chambers**:

- The **right atrium**
- The **right ventricle**
- The **left atrium**
- The **left ventricle**

The **atria** receive blood, and the **ventricles** pump blood out of the heart. The heart also has **valves** that control the direction of the blood. These valves **open and close** during the cardiac cycle to prevent blood from flowing backward.

The main valves are:

## CARDIAC CYCLE



- Tricuspid valve
- Pulmonary valve
- Mitral valve
- Aortic valve

### Phases of the Cardiac Cycle

The cardiac cycle has two main phases: **diastole** and **systole**.

#### Diastole

During **diastole**, the heart **relaxes**. The atria and ventricles are relaxed, and blood **enters the heart**. Blood flows from the veins into the atria and then into the ventricles.

In this phase:

- The **atria are filled with blood**
- The **ventricles receive blood**
- The **valves are open**

Diastole is important because it allows the heart to **prepare for the next beat**.

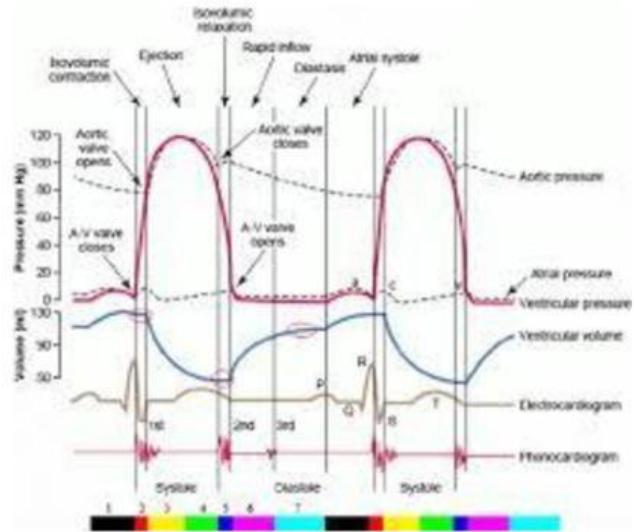
#### Systole

During **systole**, the heart **contracts**. The ventricles contract and **pump blood out** of the heart.

In this phase:

- The **right ventricle pumps blood** to the lungs
- The **left ventricle pumps blood** to the body
- The **valves close** to stop blood from going back

Systole helps blood move through the **circulatory system**.



## Blood Flow in the Cardiac Cycle

Blood flow follows a specific path:

1. Blood enters the **right atrium**
2. Blood moves to the **right ventricle**
3. Blood is pumped to the **lungs**
4. Oxygen-rich blood returns to the **left atrium**
5. Blood moves to the **left ventricle**
6. Blood is pumped to the **body**

This process is repeated with every heartbeat.

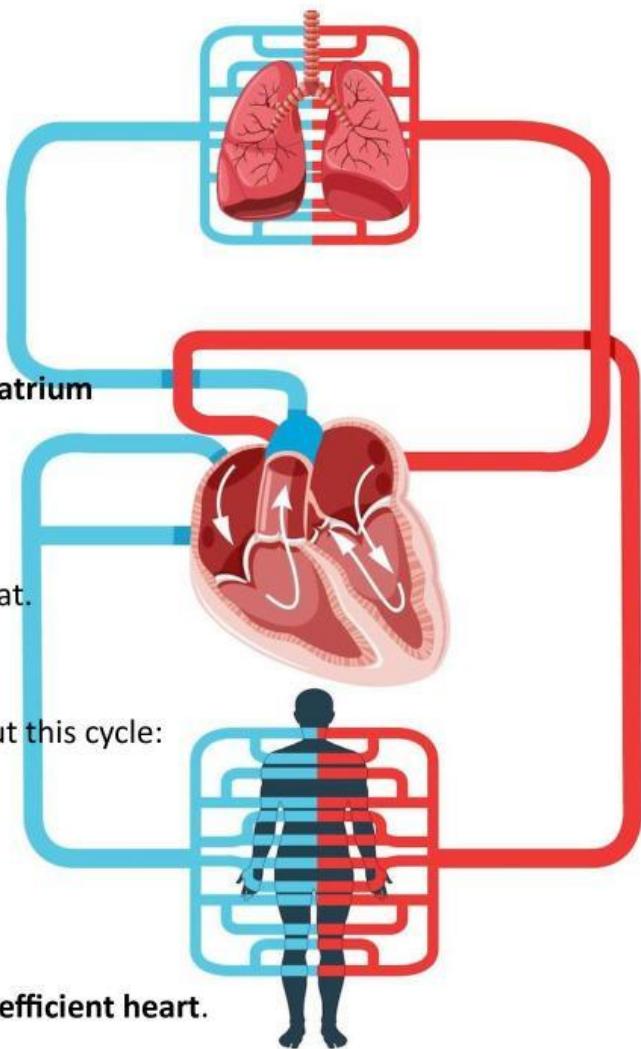
## Importance of the Cardiac Cycle

The cardiac cycle is essential for **life**. Without this cycle:

- Oxygen would not reach the cells
- Organs would stop working
- The body would not survive

A healthy cardiac cycle means a **strong and efficient heart**.

## Activities



## Heart and Lungs blood flow

### 1. Inference Techniques (10 Statements)

Read the text and decide if the statements are **True (T)** or **False (F)**.

1. The cardiac cycle helps move oxygen in the body. T F
2. The ventricles receive blood before pumping it. T F
3. The heart stops during diastole. T F
4. Blood flows backward during systole. T F

5. Valves help control blood direction.	T	F
6. The cardiac cycle happens once a day.	T	F
7. The atria are smaller than the ventricles.	T	F
8. Diastole helps the heart rest.	T	F
9. Blood is pumped to the lungs first.	T	F
10. The cardiac cycle is necessary for life.	T	F

## 2. Semantic Relationships (10 Exercises)

### A. Synonyms

Choose the correct synonym from the text.

1. Pump = **move / stop / break**
2. Important = **essential / small / weak**
3. Begin = **start / finish / close**

### B. Antonyms

Choose the opposite word.

4. Open ≠ **closed / full / soft**
5. Relax ≠ **contract / rest / wait**

### C. Cause and Effect

Choose the correct option.

6. The ventricles contract, so:
  - a) blood enters the heart
  - b) blood leaves the heart

7. Valves close because:
  - a) to stop blood flow
  - b) to increase oxygen
  
8. Blood goes to the lungs to:
  - a) remove oxygen
  - b) get oxygen

### 3. Vocabulary – Key Words

Word	Definition
<b>Valve</b>	The process of one heartbeat
<b>Circulatory system</b>	Upper chamber of the heart
<b>Ventricle</b>	Lower chamber of the heart
<b>Cardiac cycle</b>	Structure that controls blood flow
<b>Heartbeat</b>	Relaxation phase of the heart
<b>Systole</b>	Contraction phase of the heart
<b>Oxygen</b>	Gas needed by the body
<b>Blood flow</b>	Movement of blood
<b>Diastole</b>	One complete heart movement
<b>Atrium</b>	System that moves blood

## 4. Grammar – Passive Voice

### Active Voice – Converted Sentences

#### From Present Simple (Passive → Active)

1. Passive: *Blood is pumped by the heart.*

Active: \_\_\_\_\_

2. Passive: \_\_\_\_\_

Active: **The blood carries oxygen to the body.**

#### From Past Simple (Passive → Active)

3. Passive:

\_\_\_\_\_.

Active: **The heart pumped blood to the lungs.**

4. Passive: *The valves were closed during systole.*

Active \_\_\_\_\_.

#### From Future (Passive → Active)

5. Passive: \_\_\_\_\_

Active: **The heart will pump blood to the body.**

6. Passive: *Oxygen will be delivered to the cells.*

Active: \_\_\_\_\_

#### From Present Perfect (Passive → Active)

7. Passive: *Blood has been pumped many times today.*

Active: \_\_\_\_\_

8. Passive: \_\_\_\_\_

Active: Doctors have studied the heart.

**From Multiple Choice (Passive → Active)**

9. Passive: \_\_\_\_\_

Active: The blood has carried oxygen to the body.

10. Passive: Blood will be pumped to the lungs.

Active: \_\_\_\_\_

T. SUE