

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

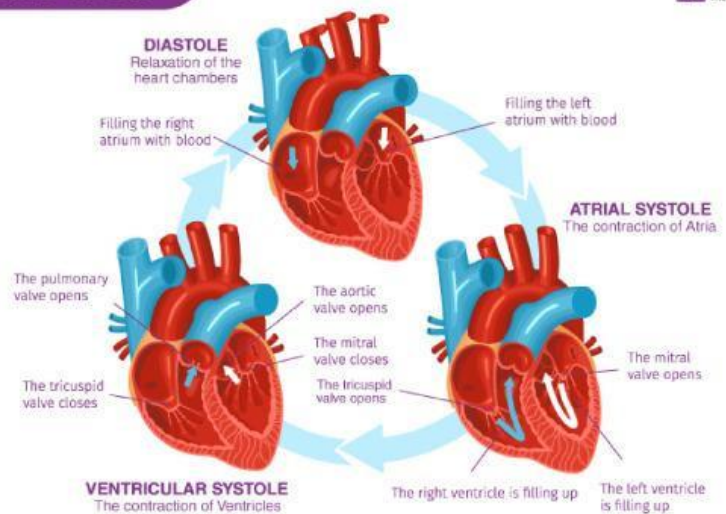
The heart has **four chambers**:

- 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**.

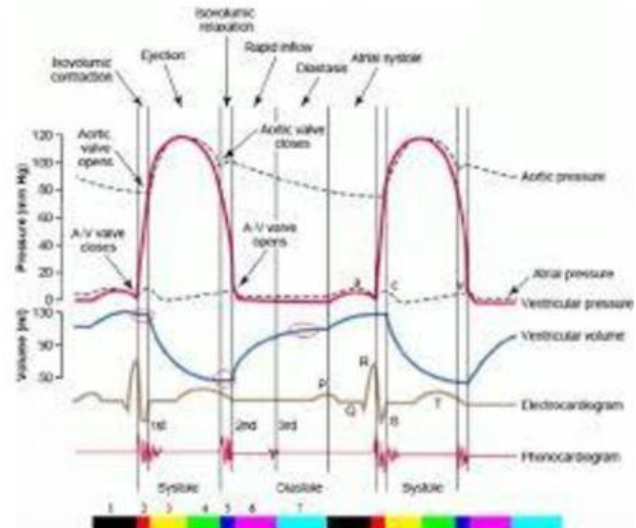
Systole

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.

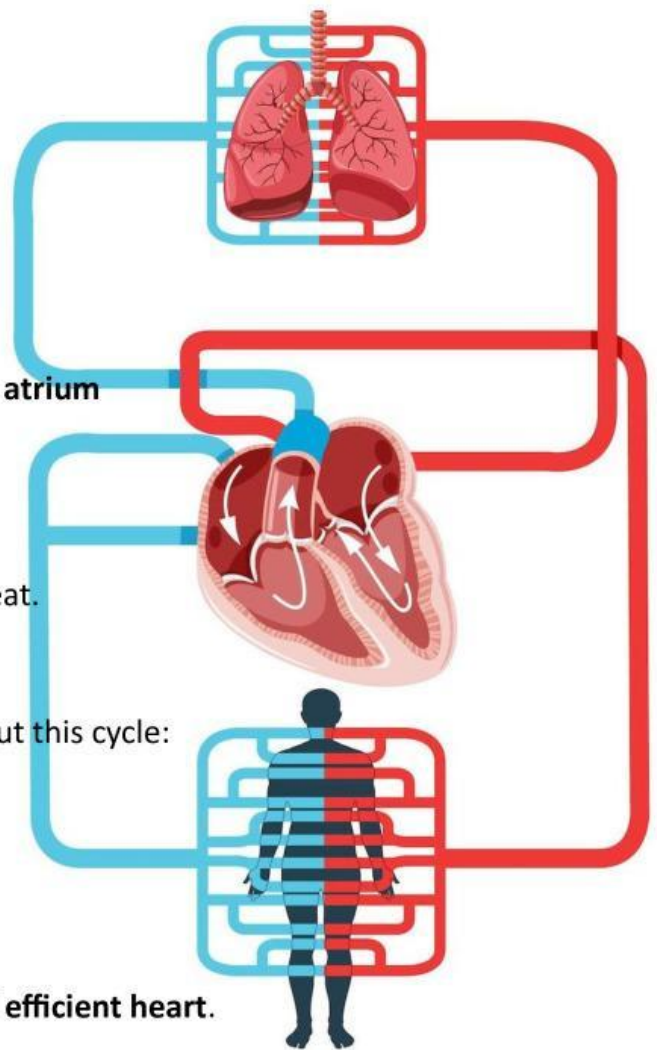
Importance of the Cardiac Cycle

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