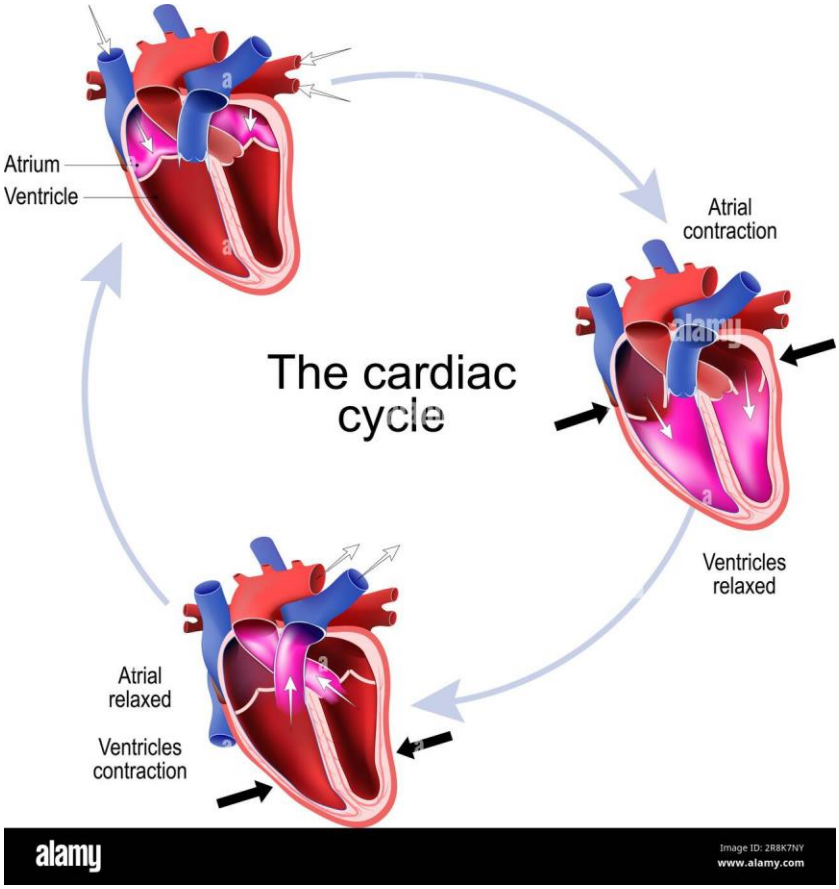
Dr. Ali Alomran

Cardiac Cycle



The cardiac cycle is the sequence of events in the heart from one hea rtbeat to the next. It includes the phases of contraction (systole) and relaxation (diastole) of the atria and ventricles.

1. Diastole:

- The atria and ventricles are in a relaxed state.
- Blood flows from the veins into the atria.

2. **Atrial Systole**:
    - The atria contract to push blood into the ventricles.
    - Atrioventricular (AV) valves close to prevent backflow.
3. **First Ventricular Systole**:
    - The ventricles begin to contract.
    - Blood is pushed into the arteries (aorta and pulmonary artery).
4. **Ventricular Diastole**:
    - The ventricles relax and return to their normal state.
    - Blood flows again into the ventricles from the atria.

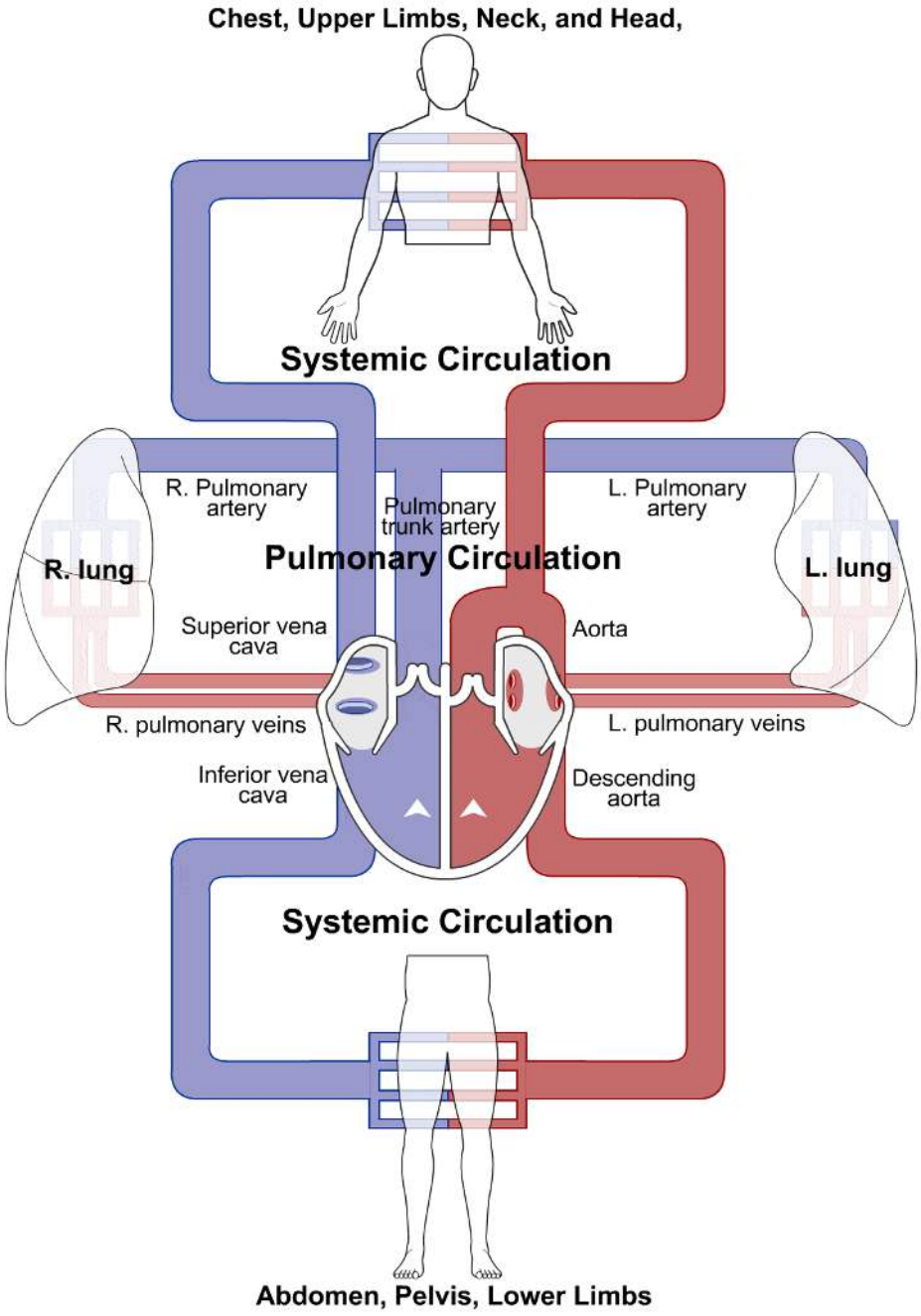
Detailed Phases of the Cardiac Cycle

1. **Complete Diastole**:
    - Heart valves are closed.
    - Blood enters the atria from the pulmonary and systemic veins.
2. **Atrial and Ventricular Diastole**:
    - AV valves open.
    - Blood flows freely into the ventricles.

3. **Atrial Systole**:
    - The atria contract to push blood into the ventricles.
    - AV valves close after the blood passes through.
4. **Ventricular Systole**:
    - Semilunar valves open to allow blood to exit into the aorta and pulmonary artery.
    - The ventricles contract strongly to push blood into the arteries.

Cardiac Dynamics

- **Atria**:
    - Receive blood from the veins.
    - Push blood into the ventricles.
- **Ventricles**:
    - Receive blood from the atria.
    - Push blood into the arteries.
- **Valves**:
    - **Atrioventricular (AV) Valves**: Prevent backflow into the atria .
    - **Semilunar Valves**: Prevent backflow into the ventricles.


Chest, Upper Limbs, Neck, and Head,
Systemic Circulation
R. Pulmonary artery
Pulmonary trunk artery
L. Pulmonary artery
R. lung
Pulmonary Circulation
L. lung
Superior vena cava
Aorta
R. pulmonary veins
L. pulmonary veins
Inferior vena cava
Descending aorta
Systemic Circulation
Abdomen, Pelvis, Lower Limbs