

The heart is a powerful, muscular pump responsible for circulating the blood.

As part of the circulatory process the blood must travel to the lungs to receive oxygen.

The circulatory system is composed of the heart, blood, and blood vessels (arteries and veins).

Arteries carry blood away from the heart.

Veins carry blood toward the heart.

### Finding Your Heart Rate

The term Heart Rate is the speed of someone's heartbeat. It is measured in beats per minute.

A Pulse is the ability to measure someone's heart rate by feeling the rush of blood as it passes through an artery due to the beating of one's heart.

A Pulse is taken by placing the index and middle finger over the top of an artery, most commonly done in the wrist (Radial Pulse) and the neck (Carotid Pulse).

### Calculating Heart Rate – Know the difference

Maximum Heart Rate is the maximum number of heart beats per minute the average person can have based on their age.

Maximum Heart Rate =  $220 - (\text{AGE})$

Target Heart Rate is the heart rate zone at which someone exercises and that allows a person to maintain needed circulation of blood flow so they can exercise for an extended period of time.

The Target Heart Rate Zone uses a range or percentage of the MAXIMUM HEART RATE to determine the number of beats per minute that will allow for a long period of physical activity to help strengthen the heart.

Calculating Maximum Heart Rate =  $220 - (\text{AGE})$

Calculating the Target Heart Rate Zone =  $220 - (\text{AGE}) \times .70$  (70% of Maximum Heart Rate)

$220 - (\text{AGE}) \times .85$  (85% of Maximum Heart Rate)

### Some things that can be found in the Blood

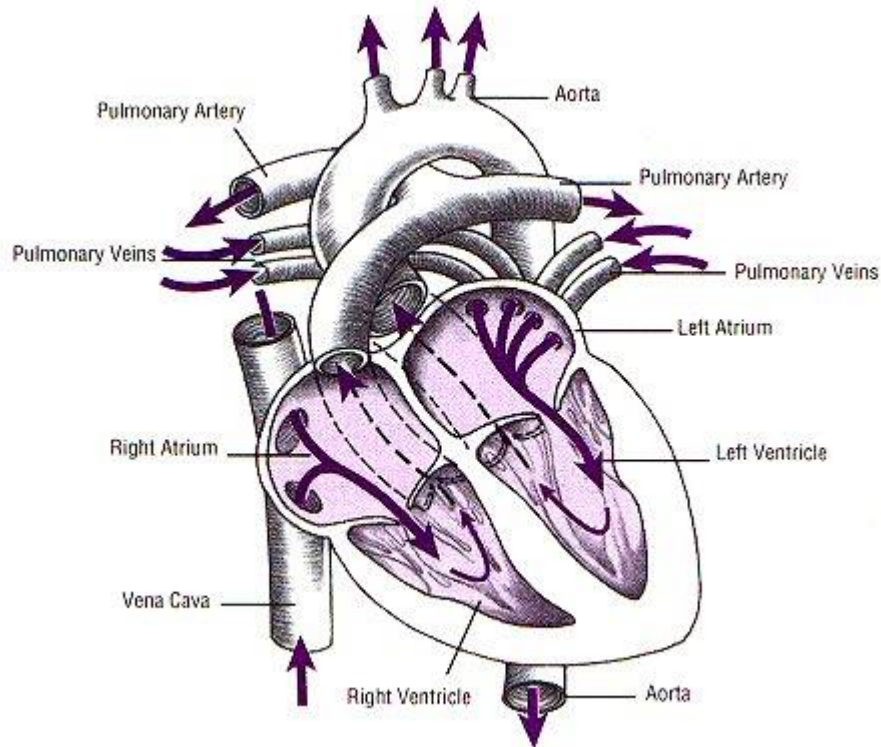
1. Pathogens cause disease or illness within the body.
2. White Blood Cells fight against the disease caused by the pathogens.
3. Red Blood Cells carry oxygen to the body parts.
4. Platelets heal cuts and wounds made in the body by forming scabs to stop the blood.

### Know the following facts about the heart

1. There are four chambers inside the heart called Atriums and Ventricles
2. The right side is blue –Carbon Dioxide (no oxygen). The left side is red – oxygen
3. The top chambers (Atriums) collect or fill with the blood as it re-enters the heart.
4. The bottom chambers (Ventricles) push the blood out of the heart.
5. The blood without oxygen leaves the heart and goes to the lungs to get oxygen.
6. The blood with oxygen leaves the heart through the AORTA, and is then delivered to the body parts.
7. Valves in the heart allow and restrict the blood flow as it travels into and out of the chambers.

Blood Circulation Process – Know the blood flow listed at the bottom of the page. You do not need to memorize diagram labels, the picture is for reference only.

### Human Heart Diagram



The heart has two sides:

- The left side takes in oxygenated (Red) blood from the lungs (from the pulmonary vein).
- The oxygenated (Red) blood enters the heart's left atrium which contracts, pushing it through into the left ventricle, which pumps it out of the heart and around the body through the aorta (the main artery).
- The right side takes in deoxygenated (Blue) blood from the body (from veins) and pumps it back to the lungs to be oxygenated again.
- The deoxygenated (Blue) blood enters the heart's right atrium which contracts, pushing it through into the right ventricle, which pumps it out of the heart and back to the lungs via the pulmonary artery.
- Four one-way valves control blood flow through the heart chambers.

#### Blood Flow with Oxygen

From Lungs

Pulmonary Vein

Left Atrium

Left Ventricle

Aorta

To Body – through Arteries

#### Blood Flow without Oxygen

Returns from Body – through Veins

Right Atrium

Right Ventricle

To Lungs

