

# BLOOD FLOW

And how it's affected

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## SYSTEM OVERVIEW

The cardiovascular system is responsible for transporting materials in body pump through blood by the heart.

The materials include:

- Oxygen
- Carbon dioxide
- Nutrients
- Wastes



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## HEART

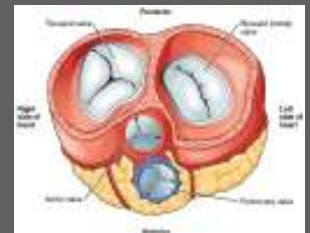


Source: [www.spallito.org](http://www.spallito.org) Anatomy (1/10/2015)

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## VALVES

- Valves open to let blood pump through and close to prevent back flow.
- As the heart contracts, valves open and shut to let blood through the chambers.
- Valves are responsible for the "lub-dub" sound of the heart.
- There are 4 valves in the heart:
  - Tricuspid
  - Bicuspid
  - Aortic
  - Pulmonary

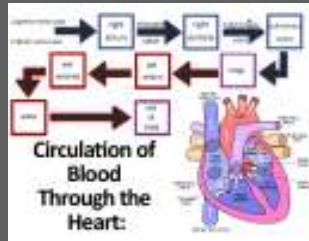


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## WHAT AFFECTS HOW THE BLOOD FLOWS THROUGH THE HEART?

- Blood flow is the amount of blood that flows through an organ at any amount of time.
- Factors that affect that amount include:
  - blood pressure
  - blood volume
  - resistance
  - blood viscosity
  - disease
  - exercise



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## BLOOD VOLUME

- Blood volume is the amount (volume) of blood in an individual's circulatory system.
- Every adult has about 5 liters of blood in them, although women may have a little less.

- At your tables, discuss with your table mates how blood volume could affect blood flow



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## BLOOD VOLUME

If there isn't enough blood in a person, blood will not be able to fully circulate through the body.

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## BLOOD PRESSURE

- Blood pressure is force of blood that is ejected through when the ventricles close.
- Blood pressure is dependent on blood volume.
- If there isn't enough blood circulating, there won't be enough to create pressure as it flows through when the ventricles contract.

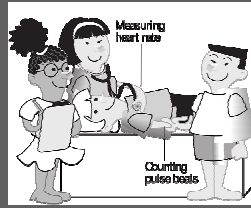


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## PULSE AND HEART RATE

- The pulse is the pressure wave of blood.
- It is monitored at pressure points.
- Measuring your pulse is an easy way to measure your heartrate.
- When the heart rate increases, the heart is pumping blood through the heart to the rest of the body at a faster pace.



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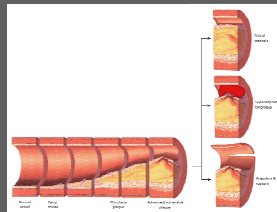
## BLOOD VISCOSITY & RESISTANCE

- Opposition to blood flow due to friction between blood and walls of blood vessels.
- Blood viscosity is the ratio of red blood cells (RBC's) to plasma and protein concentration. Higher viscosity means higher resistance.
- Blood can't flow because the walls of the blood vessels and blood are competing for space and end up rubbing against each other.
- This causes the blood to flow through the heart slowly, making the time for oxygen and nutrients to get to other organs longer.

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## DISEASES

- Diseases can affect blood flow as well.
- Example: atherosclerosis is a preventative disease of the heart where the arteries get clogged and blood can't flow through.
- Usually caused by poor diet.
- Blood can no longer be pumped through the heart and get to the rest of the body.



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## DIET AND EXERCISE

- Now that we know some of the diseases and what happens to the heart when the rate increases, why are diet and exercise so important?
- Discuss with your shoulder partner and document your answer while I walk around and check.



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## DIET AND EXERCISE

A well balanced diet can prevent certain heart diseases and exercise helps the heart pump blood efficiently. The heart rate increases without making the heart work *harder*, just healthier.

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