جامعة الفرات الاوسط التقنية /المعهد التقني سماوة

مجتمع قسم تقنيات صحة

المحاضرة السابعة

اسم المادة / وظائف اعضاء 1.

المرحلة الدراسية / الاولى

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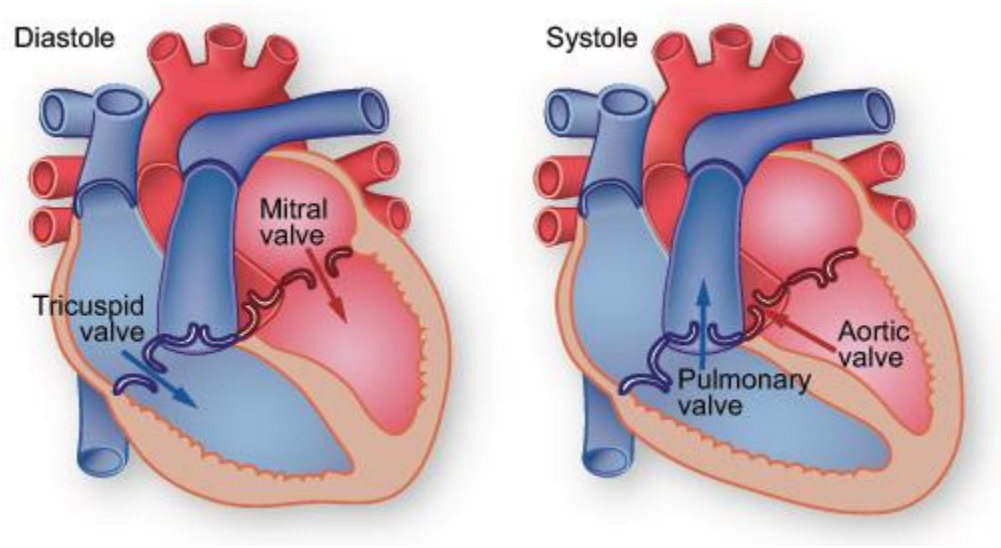
Heart beat



A heartbeat is a two-part pumping action that takes about a second. As blood collects in the upper chambers (the right and left atria), the heart's natural pacemaker (the SA node) sends out an electrical signal that causes the atria to contract. This contraction pushes blood through the tricuspid and mitral valves into the resting lower chambers (the right and left ventricles). This part of the two-part pumping phase (the longer of the two) is called diastole.

The second part of the pumping phase begins when the ventricles are full of blood. The electrical signals from the SA node travel along a pathway of cells to the ventricles, causing them to contract. This is called systole. As the tricuspid and mitral valves shut tight to prevent a back flow of blood, the pulmonary and aortic valves are pushed open. While blood is pushed from the right ventricle into the lungs to pick up oxygen, oxygen-rich blood flows from the left ventricle to the heart and other parts of the body.

After blood moves into the pulmonary artery and the aorta, the ventricles relax, and the pulmonary and aortic valves close. The lower pressure in the ventricles causes the tricuspid and mitral valves to open, and the cycle begins again. This series of contractions is repeated over and over again, increasing during times of exertion and decreasing while you are at rest. The heart normally beats about 60 to 80 times a minute when you are at rest, but this can vary. As you get older, your resting heart rate rises. Also, it is usually lower in people who are physically fit.

blood pressure

Blood pressure is the pressure of the blood against the walls of the arteries.

Blood pressure results from two forces. One is created by the heart as it pumps blood into the arteries and through the circulatory system. The other is the force of the arteries as they resist the blood flow.

What do blood pressure numbers indicate?

- **The higher (systolic) number represents the pressure while the heart contracts to pump blood to the body.**
- **The lower (diastolic) number represents the pressure when the heart relaxes between beats.**

Blood pressure changes during the day. It is lowest as you sleep and rises when you get up. It also can rise when you are excited, nervous, or active.

Still, for most of your waking hours, your blood pressure stays pretty much the same when you are sitting or standing still. That level should be lower than 120/80. When the level stays high, 140/90 or higher, you have high blood pressure. With high blood pressure, the heart works harder, your arteries take a beating, and your chances of a stroke, heart attack, and kidney problems are greater.

What causes it?

In many people with high blood pressure, a single specific cause is not known. This is called essential or primary high blood pressure. Research is continuing to find causes.

In some people, high blood pressure is the result of another medical problem or medication. When the cause is known, this is called secondary high blood pressure.

What is high blood pressure?

A blood pressure of 140/90 or higher is considered high blood pressure. Both numbers are important. If one or both numbers are usually high, you have high blood pressure. If you are being treated for high blood pressure, you still have high blood pressure even if you have repeated readings in the normal range.

Factors Affect Blood Pressure Readings?

There a number of factors that will temporarily affect blood pressure. Most are short-lived and will affect your blood pressure temporarily and then blood pressure will return to resting blood pressure.

Short-lived factors that may cause changes in blood pressure, both raising and lowering, include:

- **Asleep or awake – usually lower when sleeping**
- **Body position - lying down, sitting or standing**
- **Emotional state - such as stress and anger or being relaxed**
- **Activity level - from not moving to extreme exertion**
- **Temperature – blood pressure will tend to go up when you are cold**
- **White coat hypertension – blood pressure increases in a medical setting**
- **Sleep apnea - pauses in breathing while sleeping raise blood pressure**
- **Smoking – increases blood pressure**
- **Caffeine – increases blood pressure**
- **Alcohol – increases blood pressure**

Of the above list, sleep apnea, smoking, alcoholism and chronic stress are the major factors that can, over extended periods of time, cause resting blood pressure to slowly increase due to the impact they have on the body.

There are two levels of high blood pressure: Stage 1 and Stage 2 (see the chart below).

Categories for Blood Pressure Levels in Adults*
(In mmHg, millimeters of mercury)

Category	Systolic (Top number)	Diastolic (Bottom number)
Normal	Less than 120	Less than 80
Prehypertension	120-139	80-89
High Blood Pressure	Systolic	Diastolic
Stage 1	140-159	90-99
Stage 2	160 or higher	100 or higher

*** For adults 18 and older who:**

- **Are not on medicine for high blood pressure**
- **Are not having a short-term serious illness**
- **Do not have other conditions such as diabetes and kidney disease**

Note: When systolic and diastolic blood pressures fall into different categories, the higher category should be used to classify blood pressure level. For example, 160/80 would be stage 2 high blood pressure.
There is an exception to the above definition of high blood pressure. A blood pressure of 130/80 or higher is considered high blood pressure in persons with diabetes and chronic kidney disease

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