**Ministry of Higher Education and
Scientific Research
Al-Mustaqbal University College
Department of Medical Physics**

Physics of the cardiovascular

By

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Objectives: after the end of this lecture, the student must know:

1- The principle laws that govern the heart structure and function

2- Blood pressure and its measurement

3- Types of blood flow (laminar and turbulent) and its application in diseases.

The blood is pumped by contraction of the heart muscle, from left ventricle at pressure of 125 mmHg and finally into very fine meshwork or capillary bed for few seconds the blood supplies O2 to cells and picks up CO2. Adult has about 4.5 liters of blood, each section of heart pumps 80 ml with each contraction.The combination of RBC and plasma causes blood to have flow properties different from those of fluid like water.

Starling law: fluid movement through capillary wall= the hydrostatic pressure

(p) across the capillary wall+ osmotic pressure bringing fluid in.

Work Done By The Heart

Left side of the heart systole pressure= 120 mmHg Right side of the heart diastolic pressure= 80 mmHg Above caused by following:

1- The left side of the heart three times thicker than right side.

2- The circular shape of left ventricle producing pressure larger than elliptical shape of right ventricle.

The work done=PΔV