

# *Effect of Exercise on Cardiovascular System*

**1. On blood-** Mild hypoxia developed during exercise stimulates the bone marrow and causes release of RBC's.

**2. On blood volume-** *More heat is produced during exercise and the thermo-regulatory system is activated. This in turn causes secretion of large amount of sweat leading to fluid loss and reduced blood volume, sometimes severe exercises lead to even dehydration.*

**3. On Heart Rate-** *Increases during exercise. In moderate exercise, the heart rate increases up to 180 beats/min and reaches 240 to 260 beats/min in severe muscular exercise.*

**4.On Heart-** Regular aerobic exercise training has a direct effect on heart muscles. The muscle mass of left ventricle which is pumping chamber that circulates blood throughout the body increases with exercise training, This change means that the heart can pump more blood with each beat. In short, the heart becomes bigger, stronger and more efficient pump capable of doing more work with less effort.

**5. On Cardiac Output-** It is increased upto 20 litres/min in moderate exercise and upto 35 litre/min during severe exercise. The increase in cardiac output is directly proportional to increase in amount of oxygen consumed during the exercise. The cardiac output is increased because of increase in heart rate and stroke volume.

**6.On Venous Return-** is remarkably increased during the exercise because of muscle pump. Respiratory pump and splanchnic vasoconstriction.

**7. On Blood Flow to skeletal muscles-** There is great increase in amount of blood flowing through skeletal muscles during exercise in resting condition, the blood supply to the skeletal muscle is 3-4 ml/100 gm of muscles/min, this increases upto 60-80 ml in moderate exercise and upto 90-120 ml in severe exercise.

**8. On Blood Pressure-** during moderate isotonic exercise, the systolic pressure is increased, this is due to increased heart rate and stroke volume. Diastolic pressure is not altered because the peripheral resistance is not changed during moderate isotonic exercise. In severe exercise involving isotonic muscular contraction, the systolic pressure enormously increases but the diastolic pressure decreases. This fall in diastolic pressure in severe muscular exercise is because of the reduction in peripheral resistance. Decrease in peripheral resistance is due to vasodilation caused by metabolites during exercise involving isometric contraction, the peripheral resistance is increased so the diastolic pressure is elevated with systolic pressure.