The Function of the Heart

The heart is a hollow, four-chambered muscular organ that lies beneath and to the left of the breastbone (sternum). Its primary function is to pump oxygen-rich blood to all parts of the body. The heart pumps approximately four quarts of blood per minute at rest and 10 to 15 quarts during exercise.

Blood enters the right side of the heart after it has delivered nutrients and oxygen to the body tissues. The blood is then pumped to the lungs, where it is cleansed of waste gas (carbon dioxide) and provided with a fresh supply of oxygen. The left side of the heart receives this oxygen-rich blood from the lungs. Most of the pump work of the body's circulation is done by the lower left chamber of the heart, called the left ventricle. This pumping action is repeated 60 to 100 times per minute, and each pump is counted as a pulse beat.

There are four valves in the heart—tricuspid, pulmonic, mitral and aortic—which act as one-way doors. The valves allow blood to move forward in a specific direction through the heart and prevent it from leaking backward.

Like all organs in the body, the heart requires oxygen-rich blood to perform its work. The oxygen-rich blood is supplied to the heart muscle (myocardium) by a network of blood vessels called coronary arteries. The two main coronary arteries—right and left—lie on the surface of the heart and branch into a system of smaller arteries so that every portion of the heart is supplied with nourishment. The right coronary artery and its branches supply the front and back of the right side of the heart (right ventricle) as well as the bottom of the left side of the heart (left ventricle). The left coronary artery divides into the left anterior descending artery, which supplies the front of the heart, and the circumflex artery, which winds its way around the left side to the back of the heart.

The entire body depends on the proper functioning of this organ. Diseases and abnormalities of the one-way doors (valves) or of the blood vessels (coronary arteries) may decrease the heart's function.