

# Biomechanics of blood vessels

## Article to be checked

Check of this article is requested.

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## Biomechanics of the blood vessels

The cardiovascular system consists of the heart, blood vessels, and approximately 5 liters of blood. It is responsible for transporting oxygen, nutrients, hormones, and cellular waste products throughout the body. The blood vessels are the part of the circulatory system that transports blood throughout the human body. The size of blood vessels corresponds with the amount of blood that passes through the vessel. All blood vessels contain a hollow area called the lumen through which blood is able to flow and they are all lined with a thin layer of simple epithelium known as endothelium that keeps blood cells inside of the blood vessels and prevents clots from forming.

There are three major types of blood vessels:

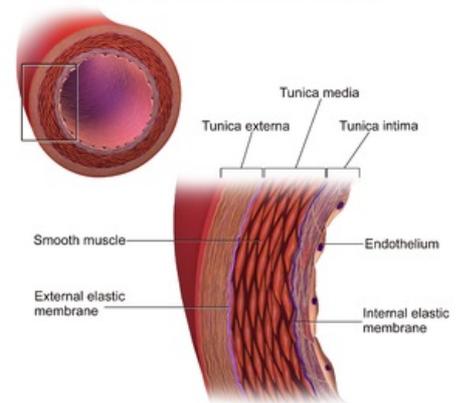
. Arteries and arterioles - Arteries transport the blood away from the heart. They face high levels of blood pressure because they carry blood being pushed from the heart under great force. That's why walls of the arteries are thicker, more elastic, and more muscular than those of other vessels. Arterioles are thinner arteries that branch off from the ends of arteries and carry blood to capillaries. They face much lower blood pressures. Arteriole walls are much thinner than those of arteries and they can also use smooth muscles to control the blood flow and pressure.

.Capillaries - Enable the actual exchange of water and chemicals between the blood and the tissues. They are the smallest and thinnest of the blood vessels in the body and also the most common. Capillaries connect to arterioles on one end and venules on the other. Capillaries carry blood very close to the cells of the tissues of the body in order to exchange gases, nutrients, and waste products.

. Veins and venules- Carry blood from the capillaries back to the heart and they are subjected to very low blood pressures. This lack of pressure allows the walls of veins to be much thinner, less elastic, and less muscular than the walls of arteries. Veins use the force of skeletal muscle contractions to help push blood back to the heart. To facilitate the movement of blood, some veins contain valves that prevent blood from returning to the extremities. The skeletal muscles when contract, they squeeze nearby veins and push blood through valves closer to the heart.

Venules are similar to arterioles as they are small vessels that connect capillaries, but unlike arterioles, venules connect to veins instead of arteries. Venules pick up blood from many capillaries and deposit it into larger veins.

## The Structure of an Artery Wall



Blausen 0055 ArteryWallStructure

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