

Protocol

Mechanisms of venous return

Method

Equipment:

Sphygmomanometer, stethoscope

Procedure:

For this observation, a subject should be chosen in 1. whom venous plexuses distinctly stand out on the forearm and hand skin. First, he stands a while with hanging arms. One may see the superficial veins being gradually filled with blood.

1. Take his forearm and bend it slowly towards the elbow. Notice that the veins start to empty when the hand is raised to the height of the heart base, i.e. at the level of the 2nd or 3rd costal cartilage.
2. Measure the blood pressure in this subject (see Exercise VIII), let the cuff on his arm and inflate it to pressure about 3 kPa (20 mm Hg) below his systolic pressure so that blood can enter his forearm but cannot flow out through compressed veins. Veins fill again with stagnating blood and stand distinctly out.
3. Choose a larger vein that can be followed in a section as long as possible and compress it with a finger near the wrist. Put a finger of the other hand on this vein closely to the first finger and expel the blood with this finger moving in the direction to the heart. Let this finger pressed to the vein and notice that the vein which was full before appears now as a shallow groove. Then release the finger at the wrist and observe how the vein gradually fills with blood from the peripheral side.
4. Perform the same experiment with expelling of blood from the vein, but let the compression at the wrist and release the proximal one. The stagnating blood again flows into the emptied vein but only up to the nearest venous valve. The valve appears as a little knot on the vein; proximal part is overfilled with blood, the distal one remains empty.

Draw a sketch of veins on the volar side of the forearm and mark the location of valves according to your own experiment.

Name:

Numer:

Study group:

