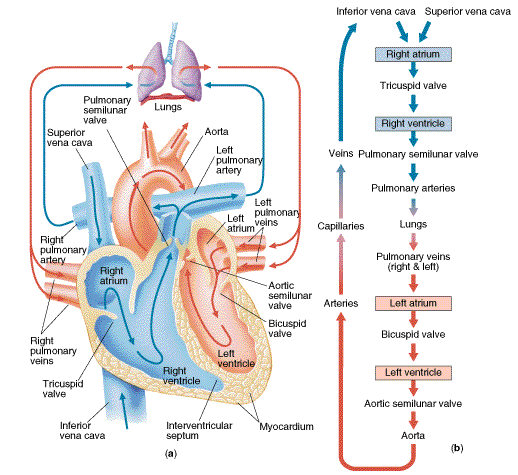
Exercsise sports health and nutrition: Cardiac Physiology

Dr. Andrew Cave, fellow in Pediatric Cardiology at OHSU

Dr. Kathryn Holmes, assistant Professor of Pediatric Cardiology at OHSU

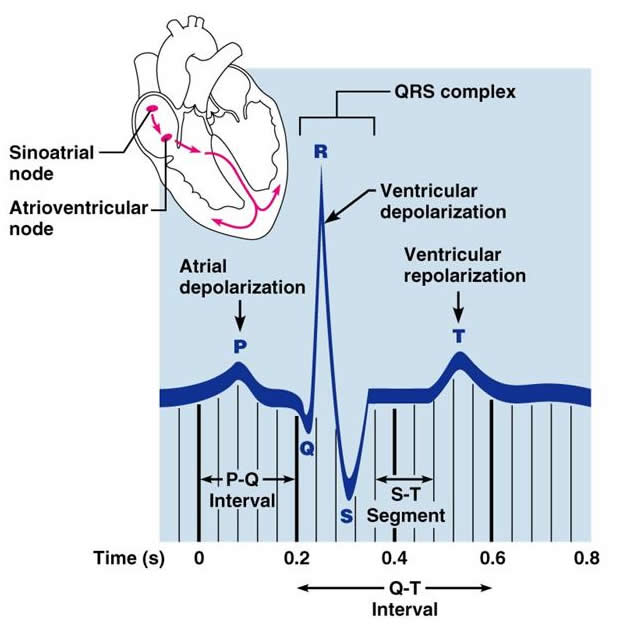
1. Review blood flow through the heart and the body (2.3)
   1. Relationship between pulmonary and systemic circulation (2.24)
   2. Blood supply to the heart and the lungs



<http://anatomyofthefoot.com/wp-content/uploads/2016/08/diagram-of-blood-flow-through-heart-kleczekbiology-circulatory-system.gif>

NOTES:

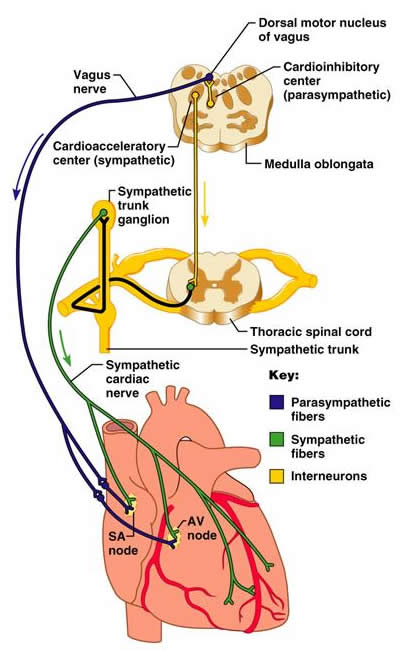
1. Review electrical signals in the heart, the ECG
   1. P wave - Atrial depolarization
   2. QRS complex - Ventricular depolarization
   3. T wave - Ventricular repolarization



<http://classes.midlandstech.edu/carterp/Courses/bio211/chap18/Slide19.jpg>

NOTES:

1. Regulation of heart rate (2.24)
   1. Heart has it’s own pacemaker (**intrinsic** **regulation**)
   2. **Sympathetic** and **parasympathetic** nervous systems override the natural pacemaker (**extrinsic regulation**)
   3. Difference in heart transplant - nerves are cut.



http://classes.midlandstech.edu/carterp/Courses/bio211/chap18/Slide18.jpg

NOTES:

1. When the heart pumps, it creates pressure in the arteries (2.29):
   1. **Systolic blood pressure:** the force exerted by the blood on the arteries during ventricular contraction
   2. **Diastolic blood pressure:** the force exerted by the blood on the arterial walls during ventricular relaxation
   3. NOTES:
2. Estimation of Cardiac Output (2.26- 2.27))
   1. Cardiac Output = Stroke Volume x Heart rate
   2. What happens in different populations
      1. Trained versus untrained athlete (2.213)
      2. Young versus old

NOTES:

1. Introduction to Echocardiography - you tube video: <https://www.youtube.com/watch?v=gsW4Ox-RPK4>
   1. Echo demonstration - with ecg
   2. Cardiac output by echo
   3. NOTES:
2. Physiologic Response to Exercise LAB
   1. HR
   2. BP
   3. Blood pool