

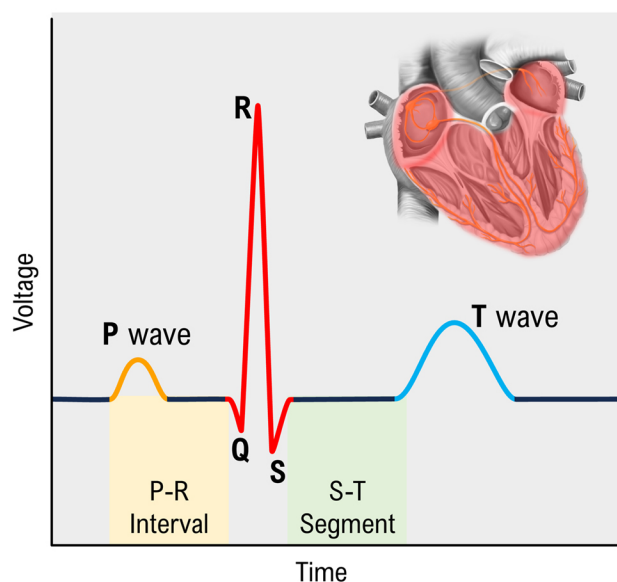
TOPIC: ELECTROCARDIOGRAM

Electrocardiogram

◆ **Electrocardiograph:** instrument that measures electrical activity in the heart using electrodes on the body.

▸ **Electrocardiogram (_____ or _____):** the recording of cardiac electrical activity.

- Measures depolarization and _____ of atria and ventricles.



P Wave: SA node fires and atria _____.

P-R Interval: Atria contracting.

- AV node _____.

QRS Complex: _____ depolarize.

- _____ repolarization also.

S-T Segment: Ventricles contracting

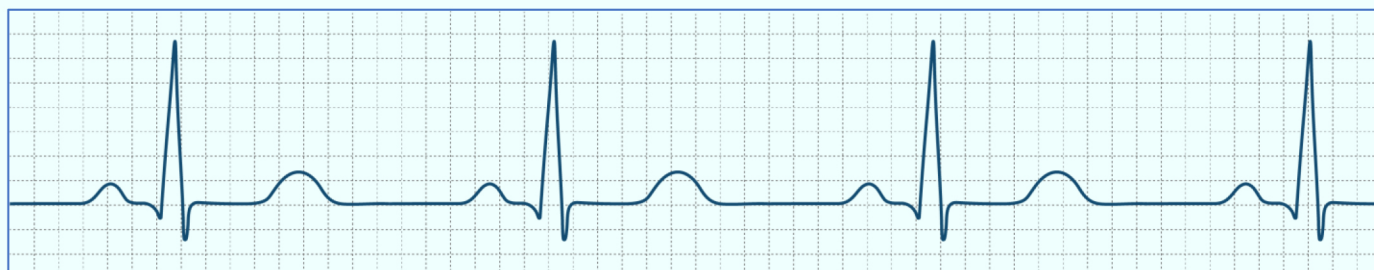
-Ventricle _____ phase.

T Wave: Ventricles _____.

EXAMPLE

On the ECG below, identify the following:

- Correctly label one heart contraction with the letters P, Q, R, S, and T.
- Put a box around the sections which measure activity of the ventricles.
- Circle the sections that measure the activity of the atria.
- In this section of readout, how many times can you observe the ventricles repolarizing? _____



TOPIC: ELECTROCARDIOGRAM

PRACTICE

When analyzing an ECG, you measure the time between the beginning of the QRS complex and the end of the T wave. Which physiological events are included in this interval?

- | | |
|---|-------------------------------------|
| a) Atrial depolarization and repolarization. | c) Atrial repolarization only. |
| b) Ventricular depolarization and repolarization. | d) Ventricular depolarization only. |

PRACTICE

During an ECG analysis of a patient, the doctor detects an abnormally prolonged PR interval. Which stage of cardiac conduction is most likely responsible for this delay?

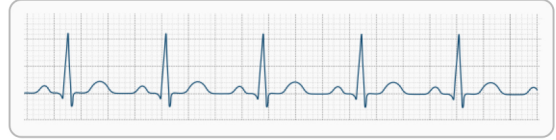
- | | |
|------------------------------------|-------------------------------------|
| a) Conduction through the SA node. | c) Atrial repolarization only. |
| b) Atrial repolarization. | d) Ventricular depolarization only. |

TOPIC: ELECTROCARDIOGRAM

Electrocardiogram: Pathologies

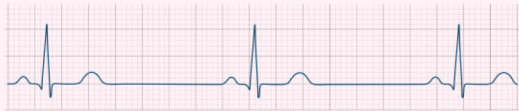
◆ ECGs help health professions diagnose heart _____.

- ▶ **Arrhythmias:** _____ heart rhythms.
- ▶ Normal ECG: Resting heart rate ____ - ____ bpm.



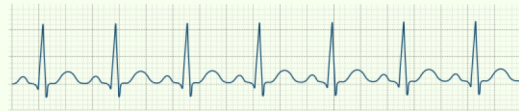
- **Bradycardia:** resting rate too _____.

- ▶ Heart rate below _____ bpm.



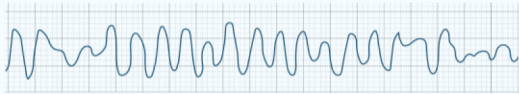
- **Tachycardia:** resting rate too _____.

- ▶ Heart rate above _____ bpm.



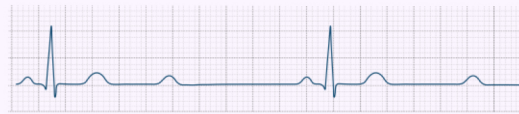
- **Fibrillation:** _____ contraction.

- ▶ Can be atrial ____ ventricular.
- ▶ Ventricular fibrillation: _____ if not immediately treated.



- **Heart block:** _____ signal.

- ▶ Issue with _____ circuit.



EXAMPLE

A normal ECG and two pathological ECGs are show below.

- For each ECG, identify it as normal (N) or pathological (P).
- If possible, identify and label at least one P wave (P), QRS complex (QRS), and T wave (T) on each diagram.

Note: not all waves or complexes may be present in all ECGs.

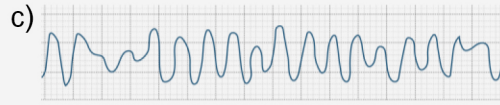
- In simple terms, what part of the heart's conduction system do you think may be failing each pathological ECG.

N/P?	Failing part of conduction system?	

TOPIC: ELECTROCARDIOGRAM

PRACTICE

Fibrillation can happen in either the atria or the ventricles. When fibrillation happens in the ventricles, it is usually immediately life threatening. Which ECG below do you think shows ventricular fibrillation?



PRACTICE

A varsity athlete went for their physical, which included an ECG. The doctors noticed that the student's heart rate was unusually low, but they told the student not to worry. What term would the doctors include in their chart to describe the student's heart?

a) Fibrillation.

c) Heart Block.

b) Bradycardia.

d) Tachycardia.