🫀 Intro to Electrocardiography – Key Terms Review

A. Basic Concepts

Electrocardiography (ECG or EKG):
The process of recording the electrical activity of the heart over a period of time using electrodes placed on the skin.

Electrocardiogram:
The actual tracing or printout that shows the heart's electrical activity.

Electrode:
A small, sticky sensor placed on the skin that detects the heart's electrical impulses.

Lead:
A view or angle of the heart's electrical activity recorded by the ECG. (12-lead ECG = 12 views of the heart.)

Artifact:
Interference or false markings on an ECG tracing caused by movement, poor electrode contact, or electrical noise.

B. Electrical Activity of the Heart

Depolarization:
Electrical activation of the heart muscle cells (contraction).

Repolarization:
Recovery phase when the heart muscle cells return to their resting state.

Conduction System:
Pathway that electrical impulses travel through the heart.

SA Node (Sinoatrial Node):
The natural pacemaker of the heart (initiates impulse).

AV Node (Atrioventricular Node):
Delays the impulse to allow the atria to contract before ventricles.

Bundle of His:
Carries impulses from AV node to the ventricles.

Right and Left Bundle Branches:
Pathways through ventricles.

Purkinje Fibers:
Spread impulses through ventricular muscle, causing contraction.

C. ECG Waveform Components

P Wave:
Atrial depolarization (atria contract).

QRS Complex:
Ventricular depolarization (ventricles contract).

T Wave:
Ventricular repolarization (ventricles recover).

PR Interval:
Time from the beginning of atrial depolarization to the start of ventricular depolarization.

ST Segment:
Time between ventricular depolarization and repolarization (normally flat).

QT Interval:
Time from start of ventricular depolarization to end of repolarization.

D. Lead Placement

Standard Limb Leads (I, II, III):
Record electrical activity between two limb electrodes.

Augmented Leads (aVR, aVL, aVF):
Unipolar limb leads that record from one limb electrode at a time.

Precordial (Chest) Leads (V1–V6):
Record activity from specific locations on the chest.

Ground Lead:
Prevents electrical interference, usually placed on the right leg.

E. ECG Recording & Quality

Baseline (Isoelectric Line):
Flat line representing no electrical activity.

Somatic Tremor:
Artifact caused by patient movement or muscle tension.

AC Interference:
Artifact caused by nearby electrical equipment.

Wandering Baseline:
Baseline shifts up and down due to loose electrodes, poor skin contact, or deep breathing.

F. Heart Rates & Rhythms

Normal Sinus Rhythm:
Regular rhythm originating from the SA node, 60–100 bpm.

Bradycardia:
Slow heart rate (<60 bpm).

Tachycardia:
Fast heart rate (>100 bpm).

Arrhythmia (Dysrhythmia):
Any irregularity in the heart's rhythm.