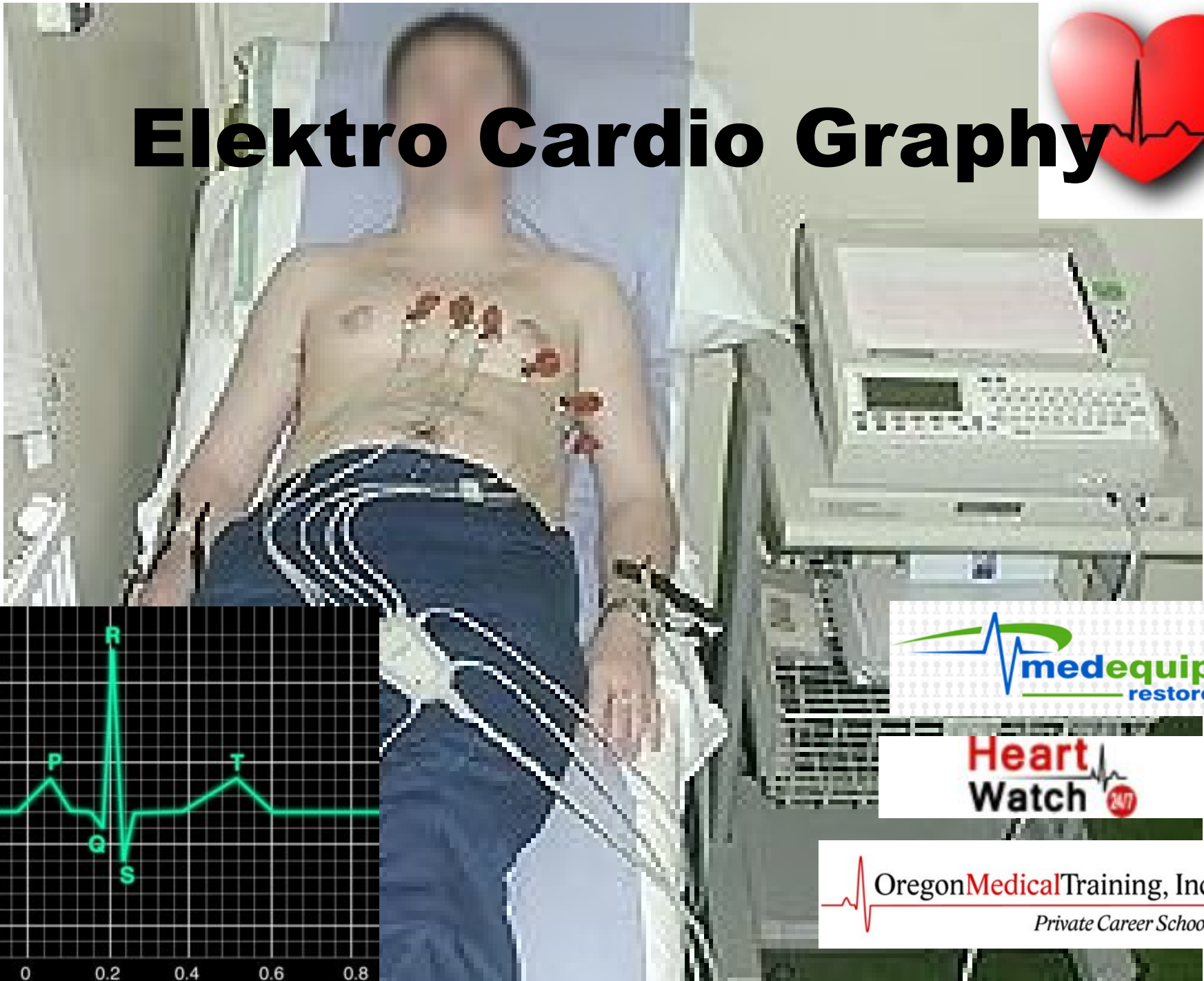
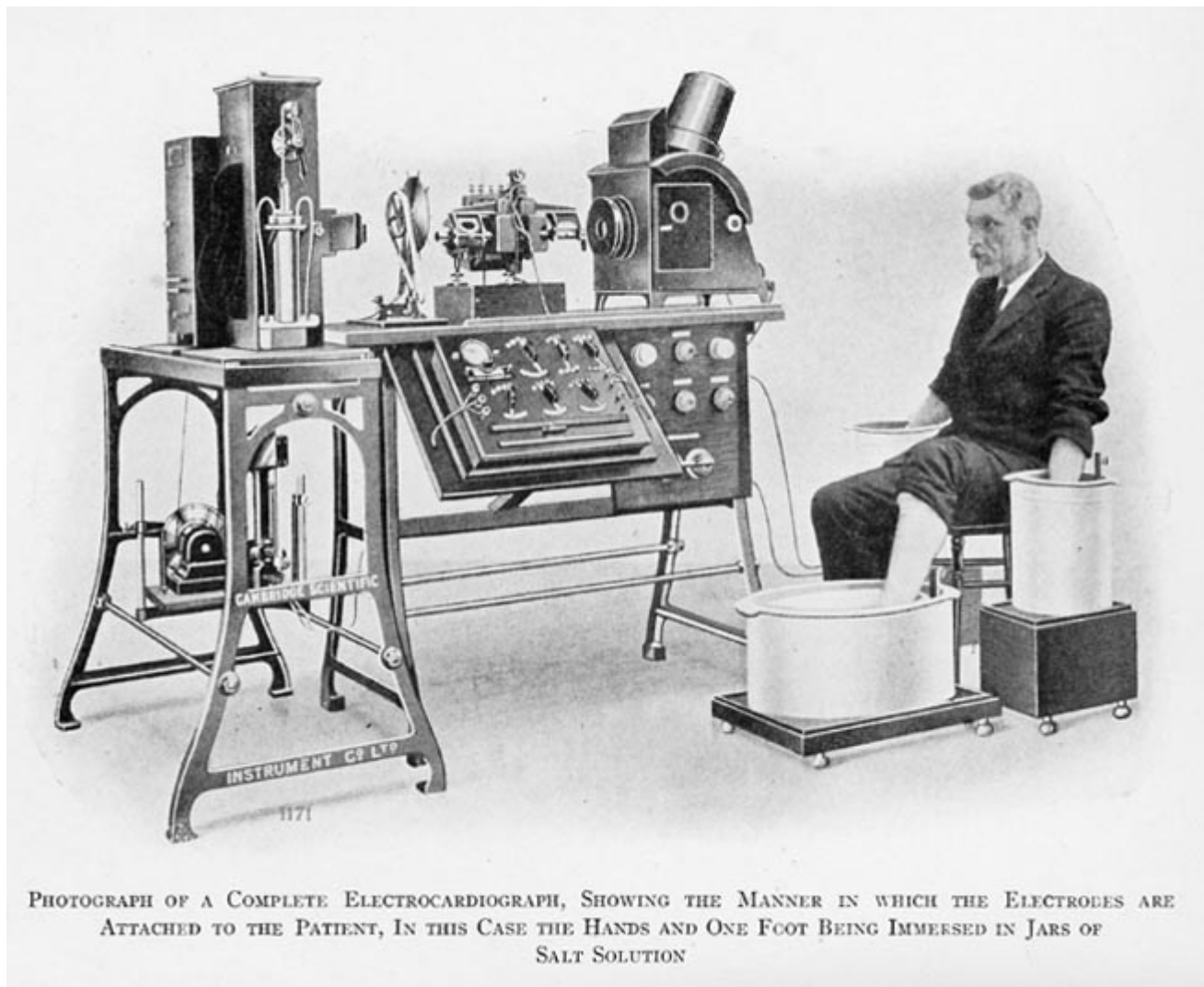


Elektro Cardio Graphy







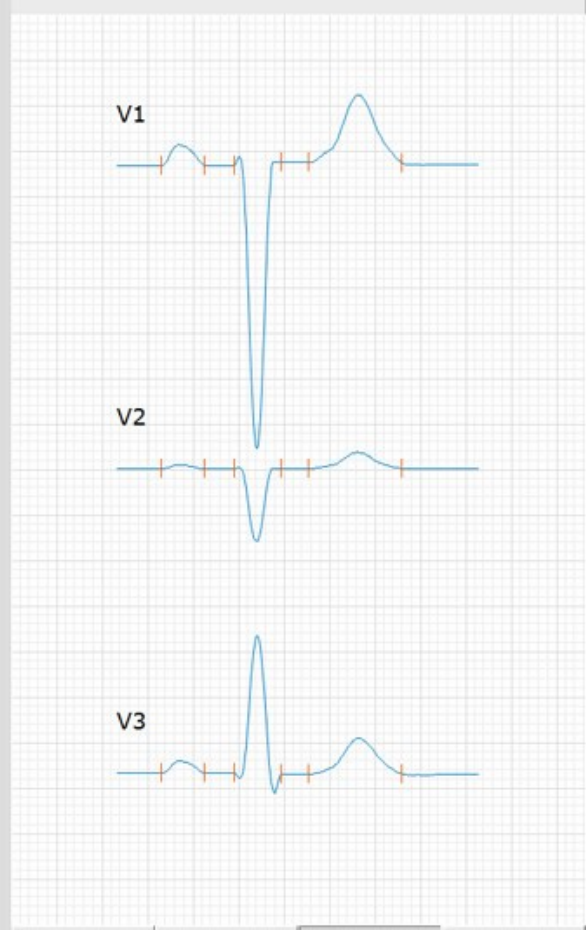
PHOTOGRAPH OF A COMPLETE ELECTROCARDIOGRAPH, SHOWING THE MANNER IN WHICH THE ELECTRODES ARE ATTACHED TO THE PATIENT, IN THIS CASE THE HANDS AND ONE FOOT BEING IMMERSSED IN JARS OF SALT SOLUTION

User	custo med GmbH	10.06.2013	14:52	? _	×
Patient	Doe John	15.04.1982 (31 Y.)			
Examination	Resting ECG	Evaluation of 10.06.2013 14:50			

HR 75 Channel 12 Channel mm/mV 10 mm/s 50 Mouse Analysis



mm/mV 30 mm/s 100



Comparison Measurement ECG Overview Options Print End

Heart Anatomy

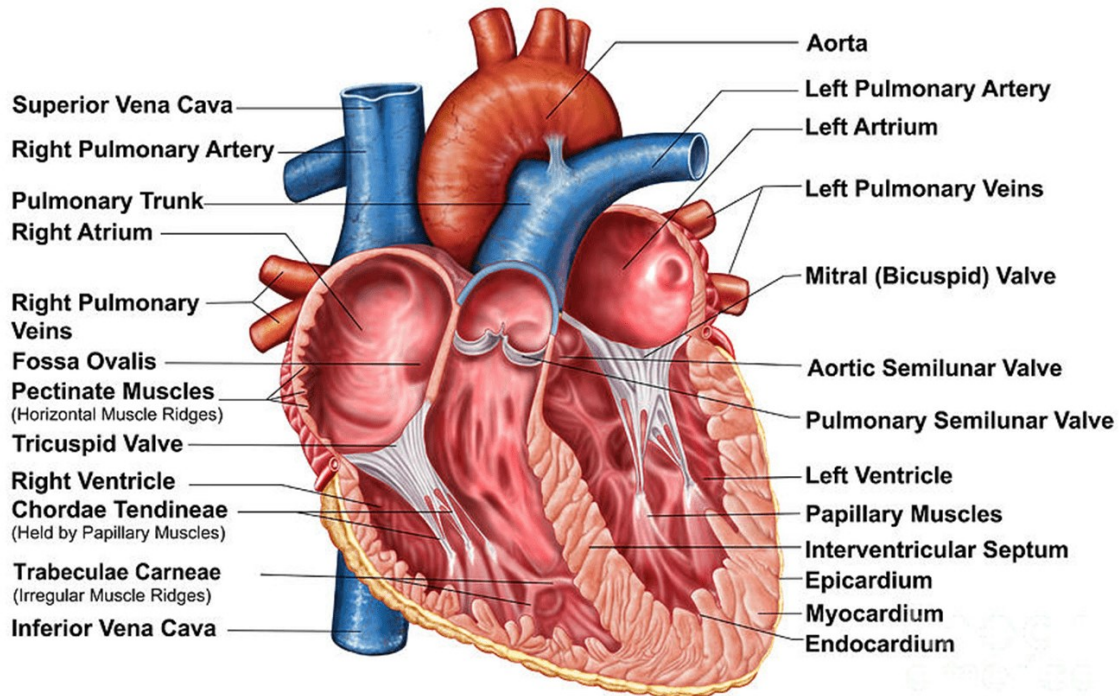
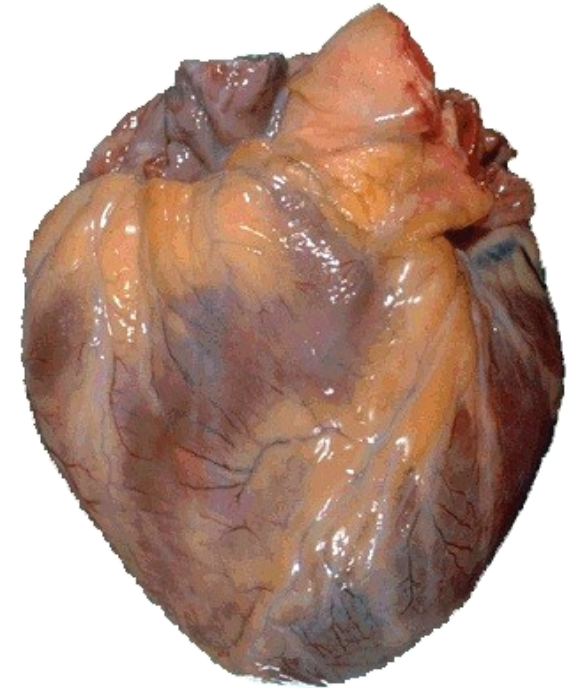


image via: wikipedia.com



How voltage is generated?

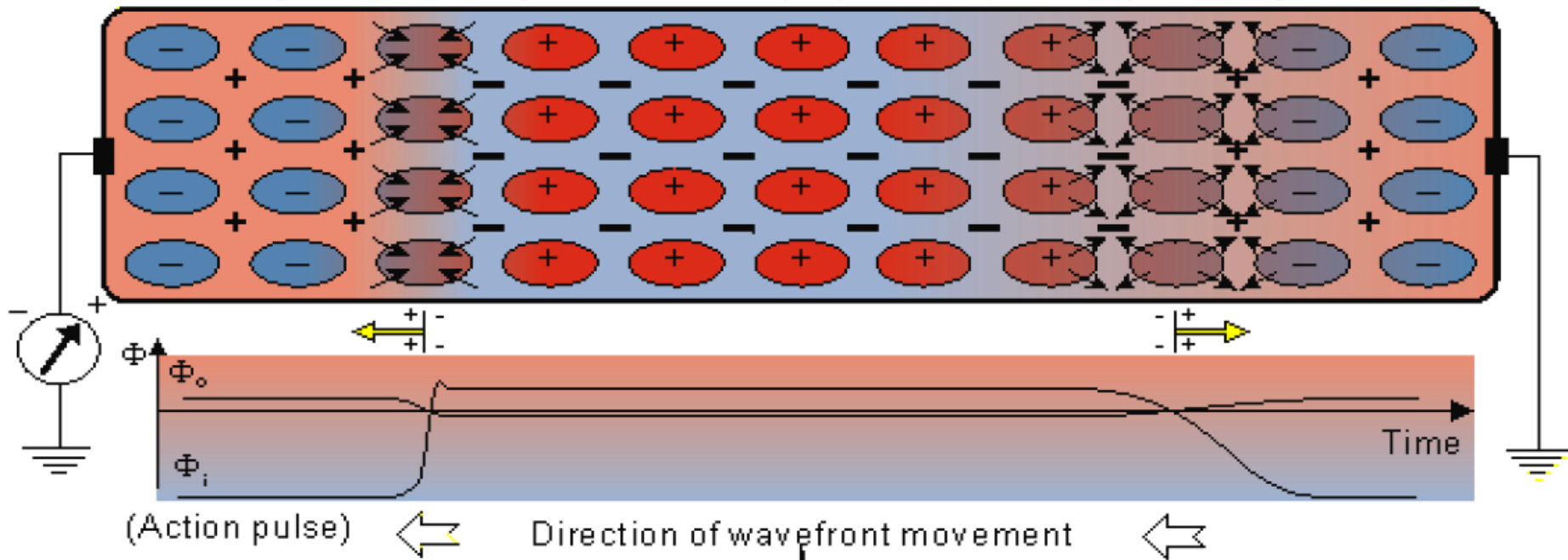
DEPOLARIZATION

Positive ions (Na^+) flowing into the depolarizing cells make Φ_o (outside the cells) more negative.

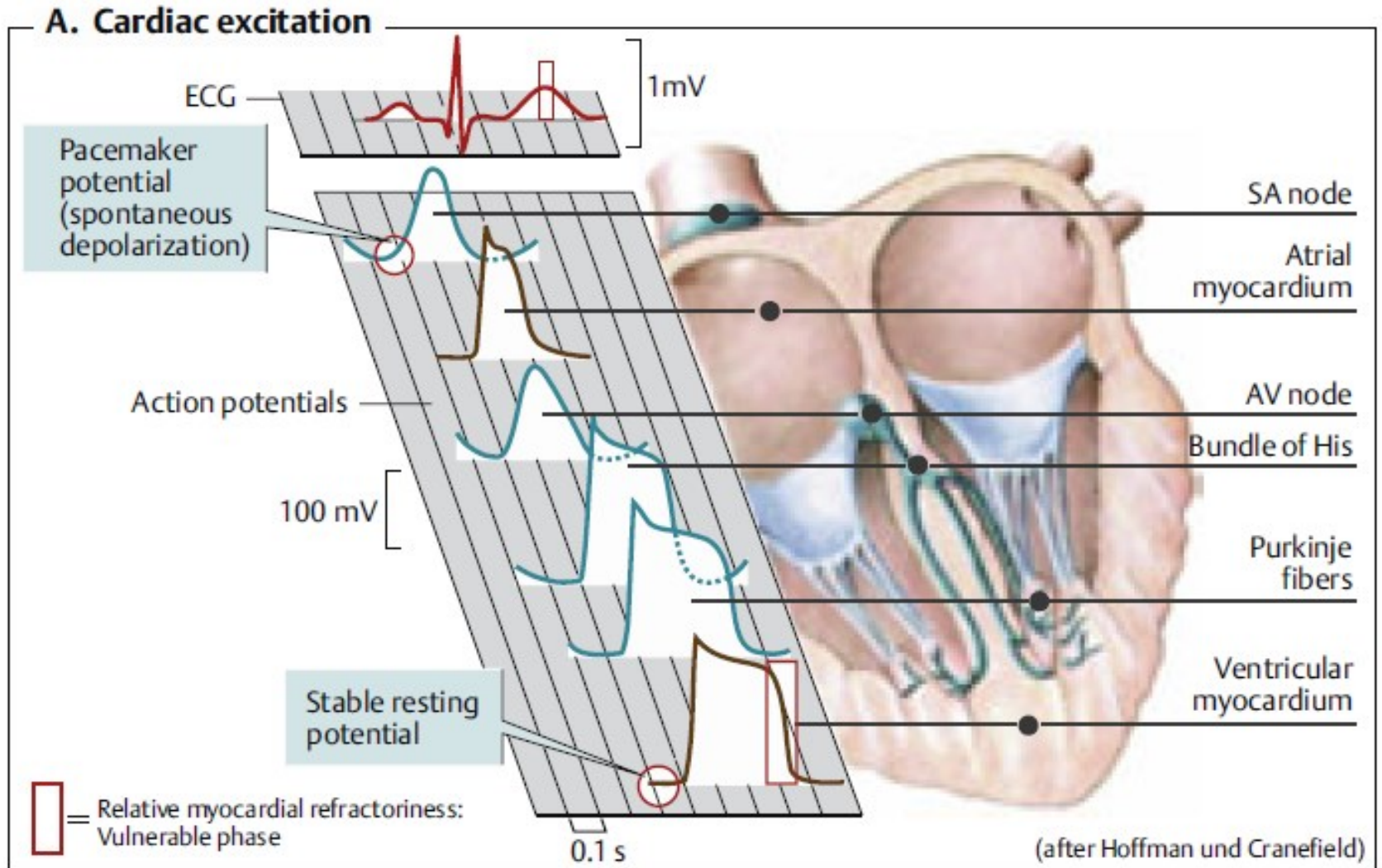
REPOLARIZATION

Positive ions (K^+) flowing out from the repolarizing cells make Φ_o (outside the cells) more positive.

Resting Depolarizing Activated (Depolarized) Repolarizing Resting

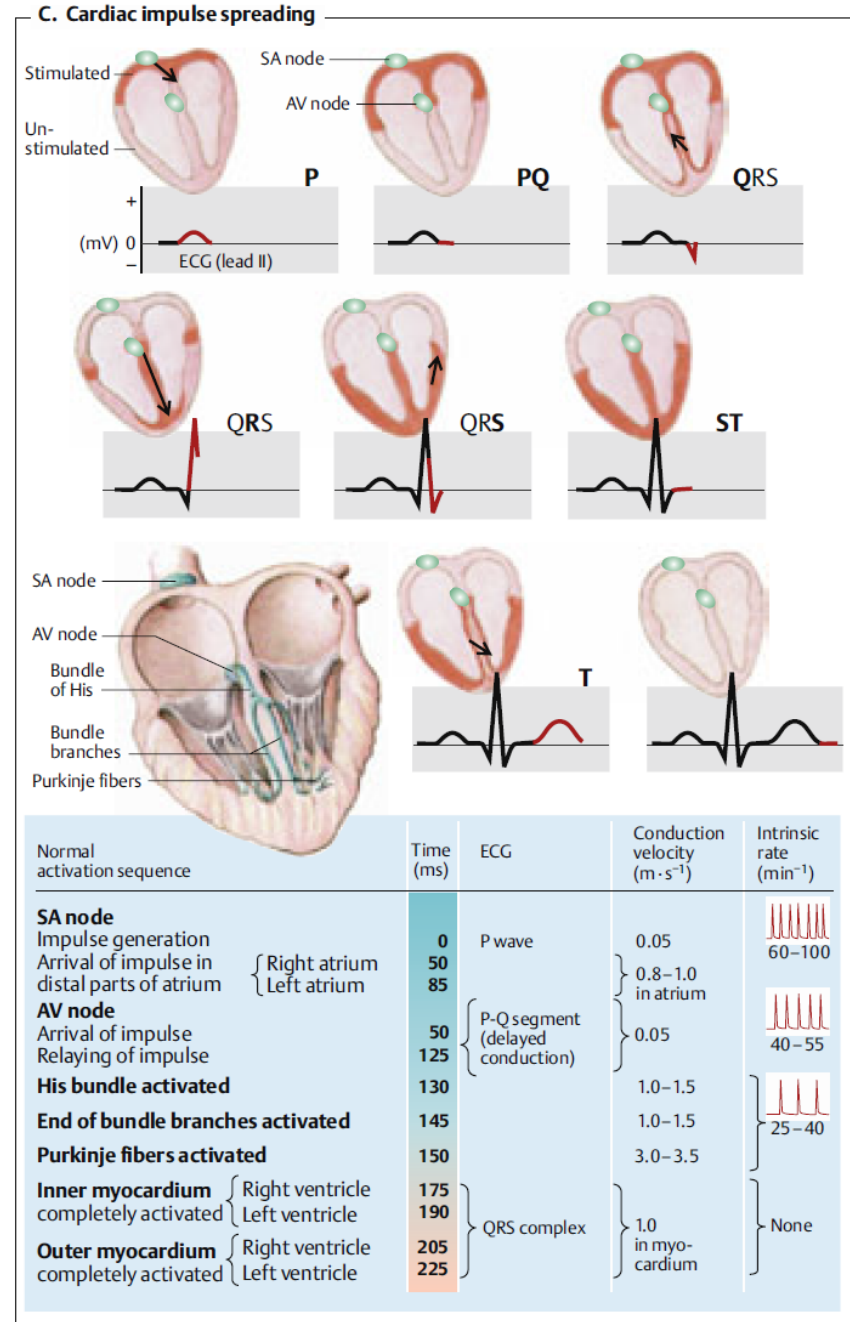


Nodes and conduction system



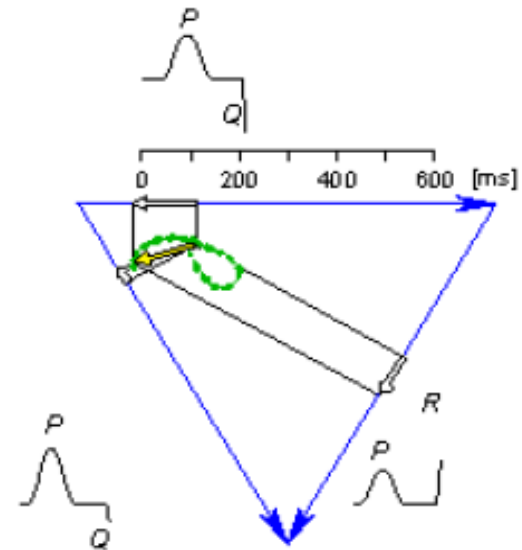
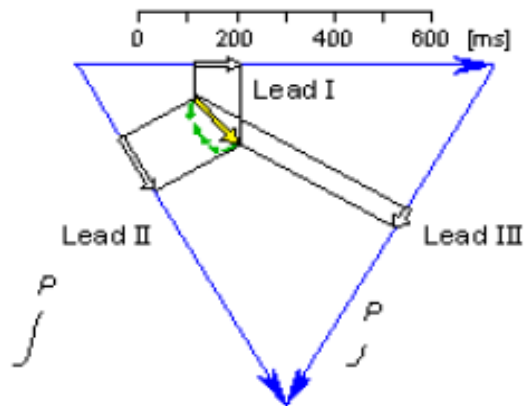
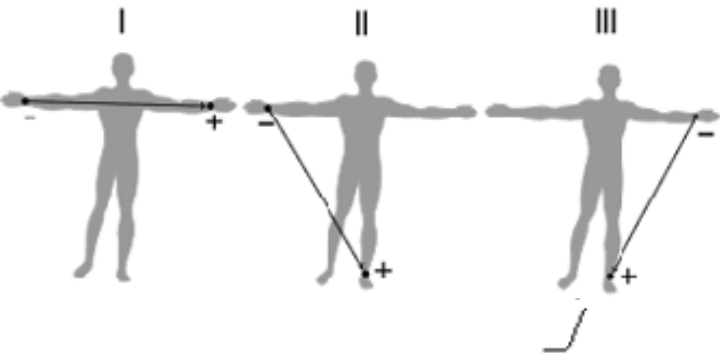
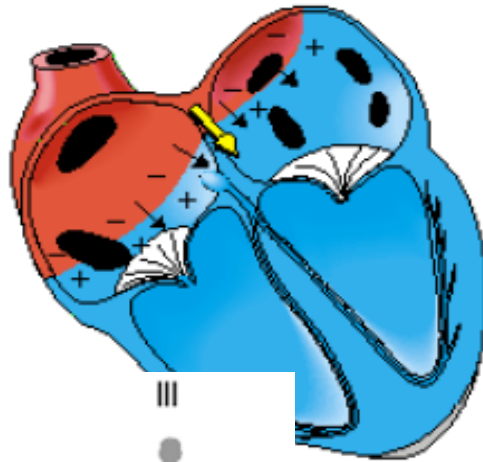
Cardiac Impulse Generation and Conduction

Wave P – atrial depolarisation
 QRS Complex – ventricular
 Depolarisation
 Wave T – ventricular repolarisation



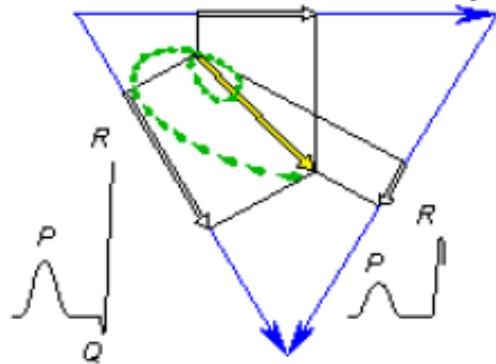
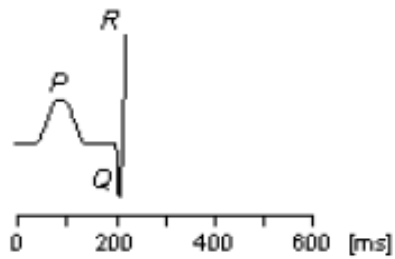
ATRIAL
DEPOLARIZATION
80 ms

SEPTAL
DEPOLARIZATION
220 ms

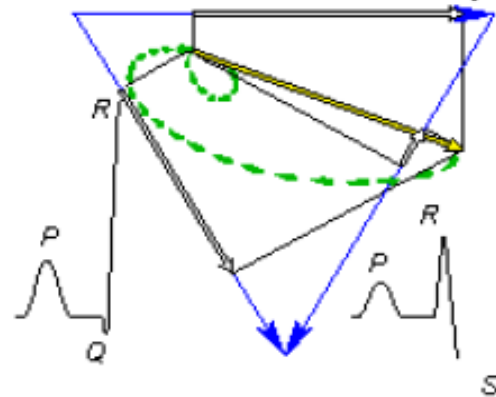
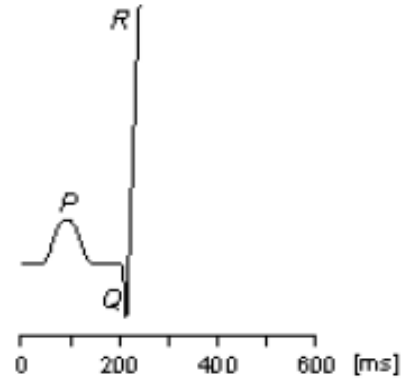
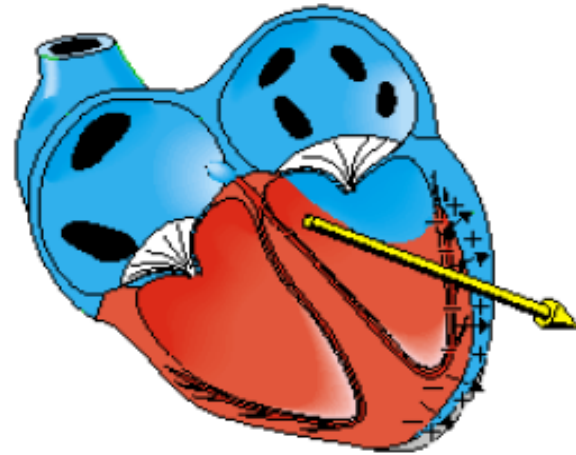


Einthoven's triangle

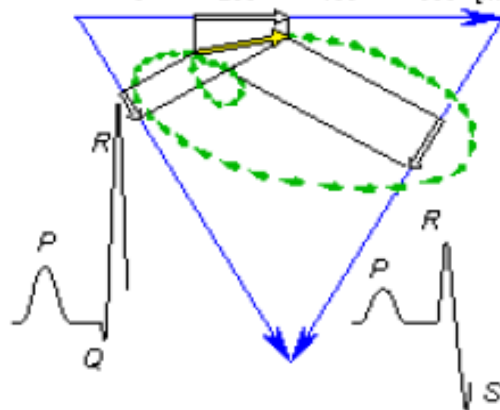
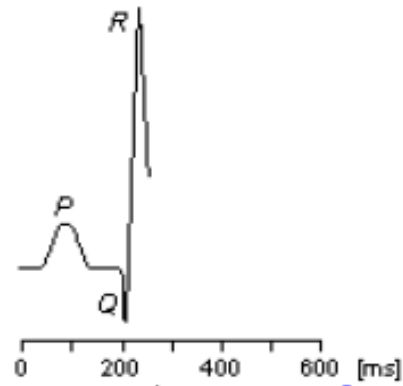
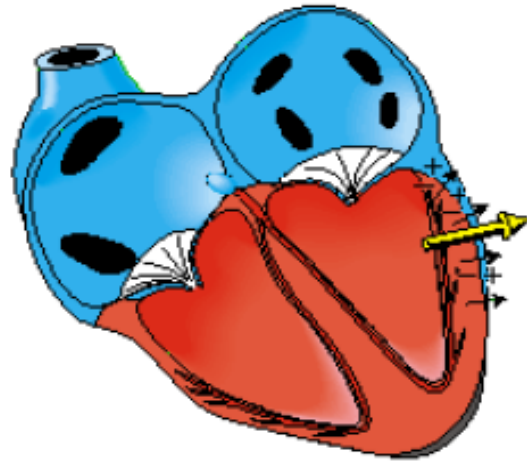
APICAL
DEPOLARIZATION
230 ms



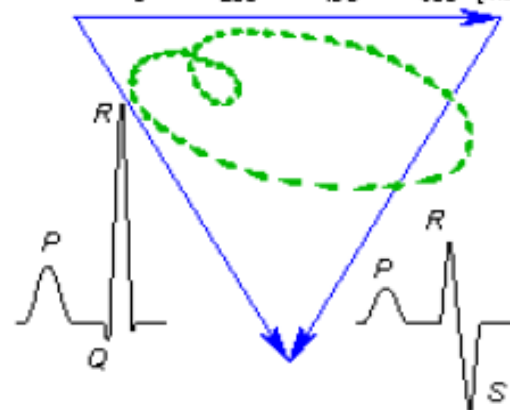
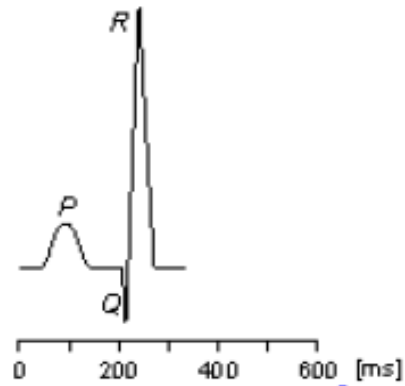
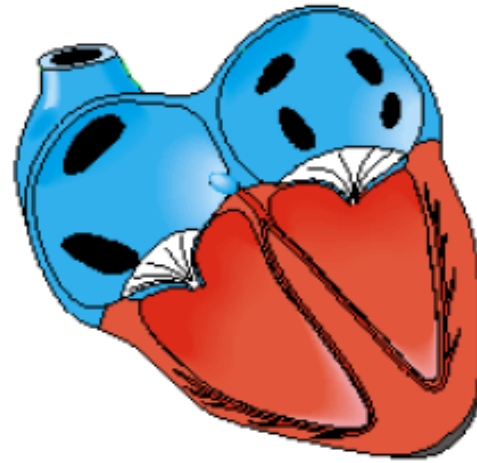
LEFT VENTRICULAR
DEPOLARIZATION
240 ms



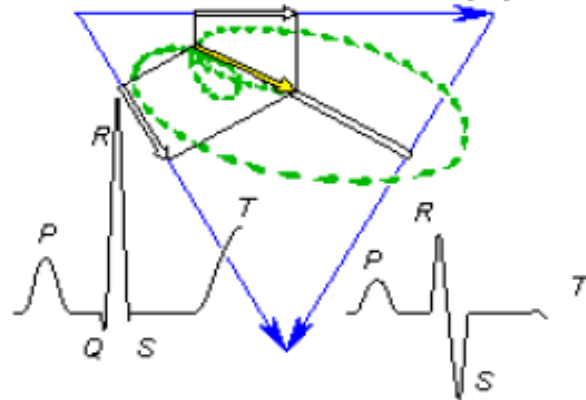
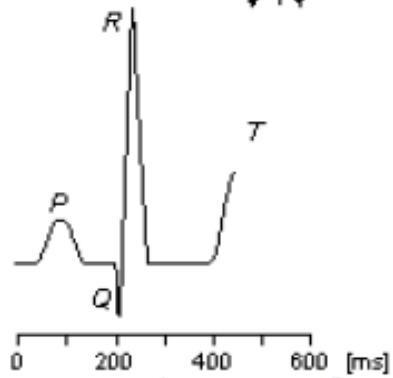
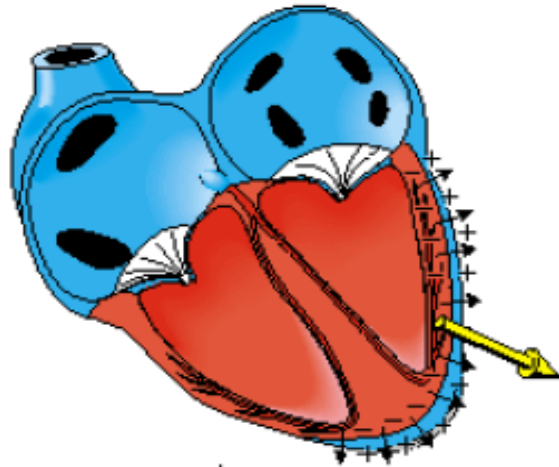
LATE LEFT VENTRICULAR
DEPOLARIZATION
250 ms



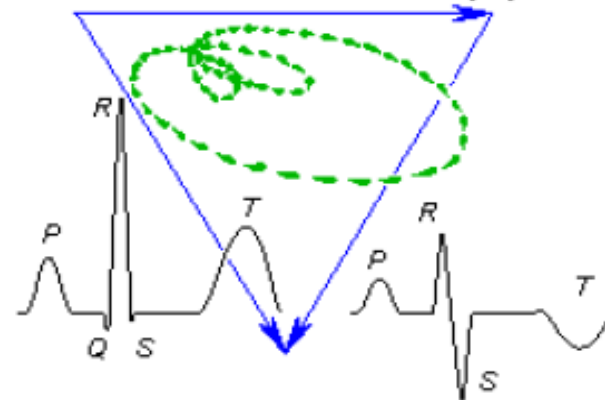
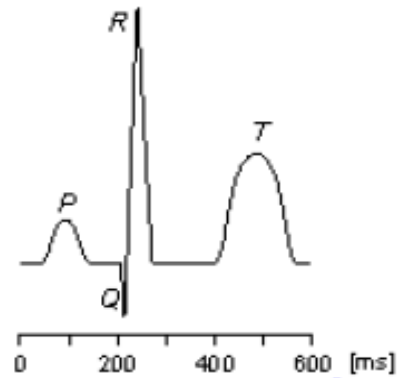
VENTRICLES
DEPOLARIZED
350 ms

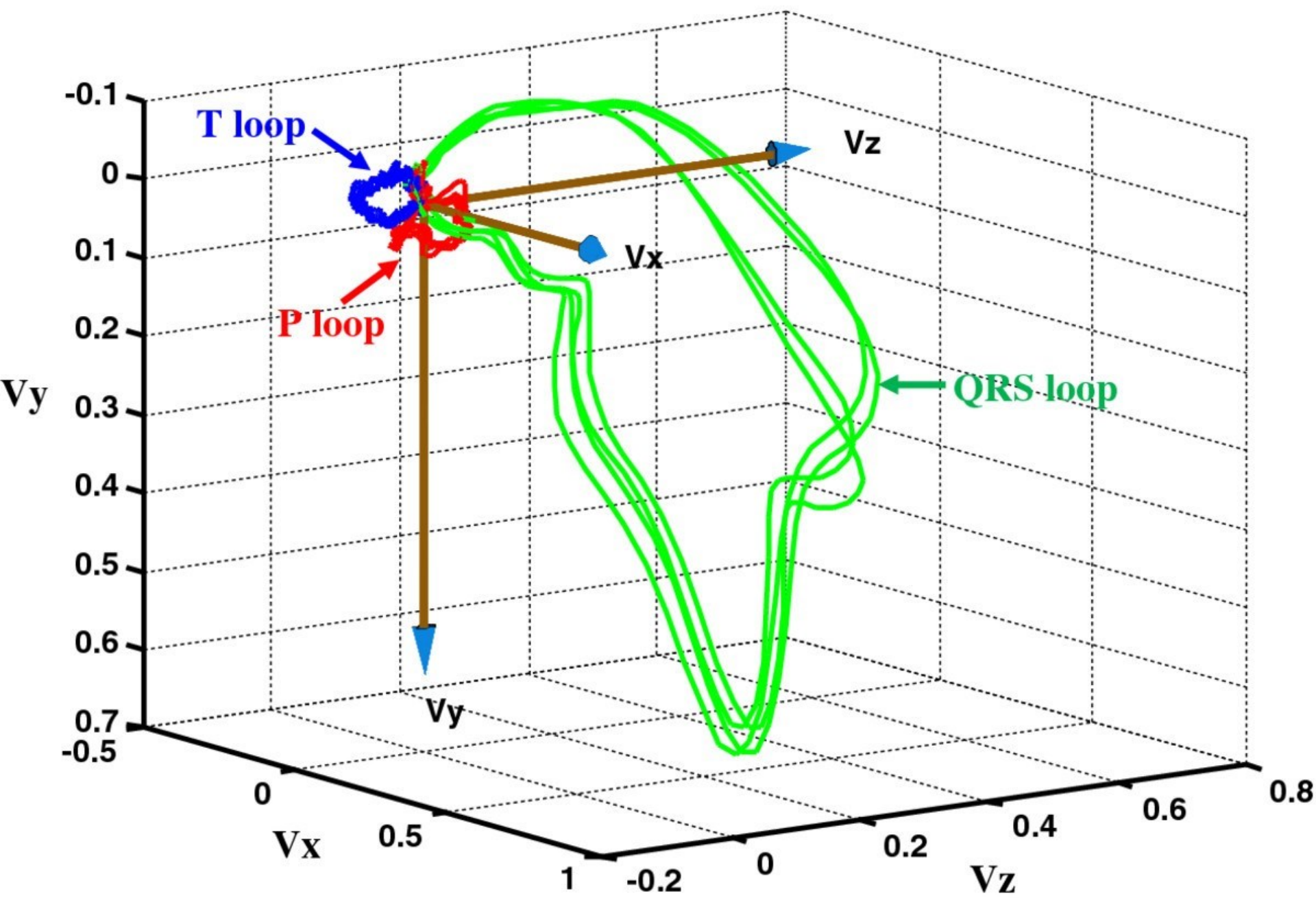


VENTRICULAR
REPOLARIZATION
450 ms

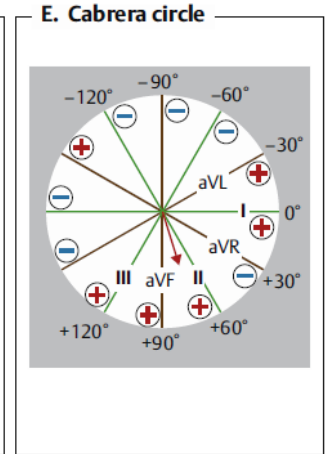
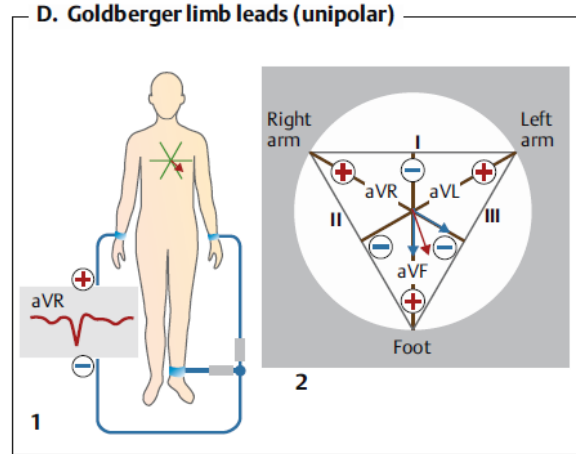
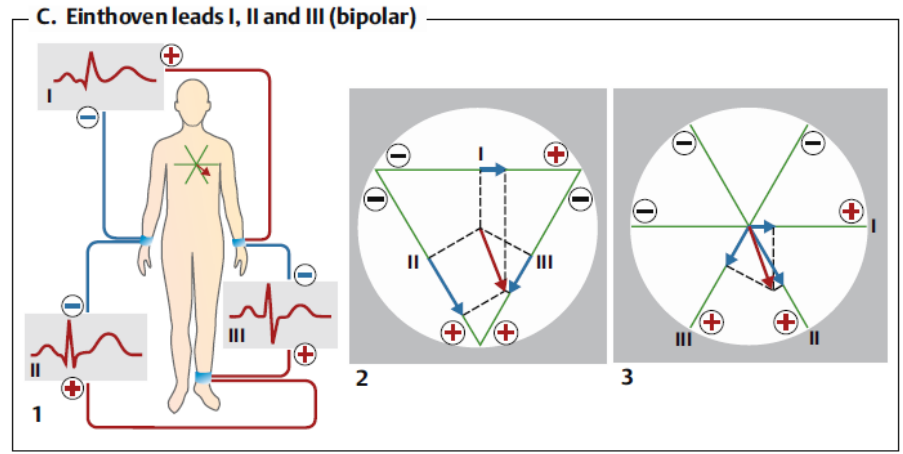
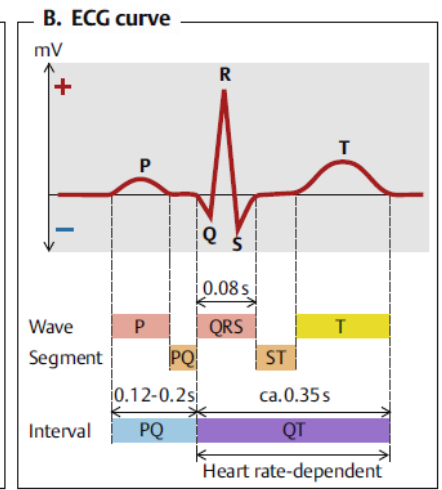
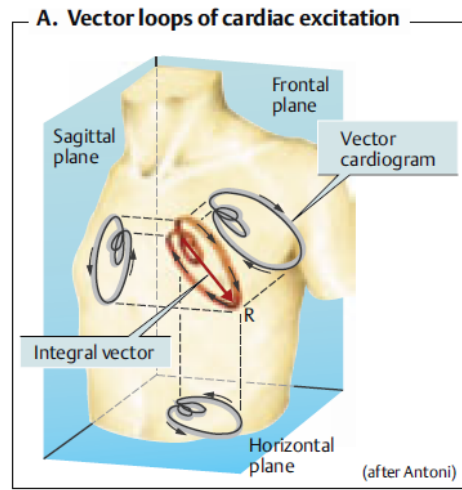


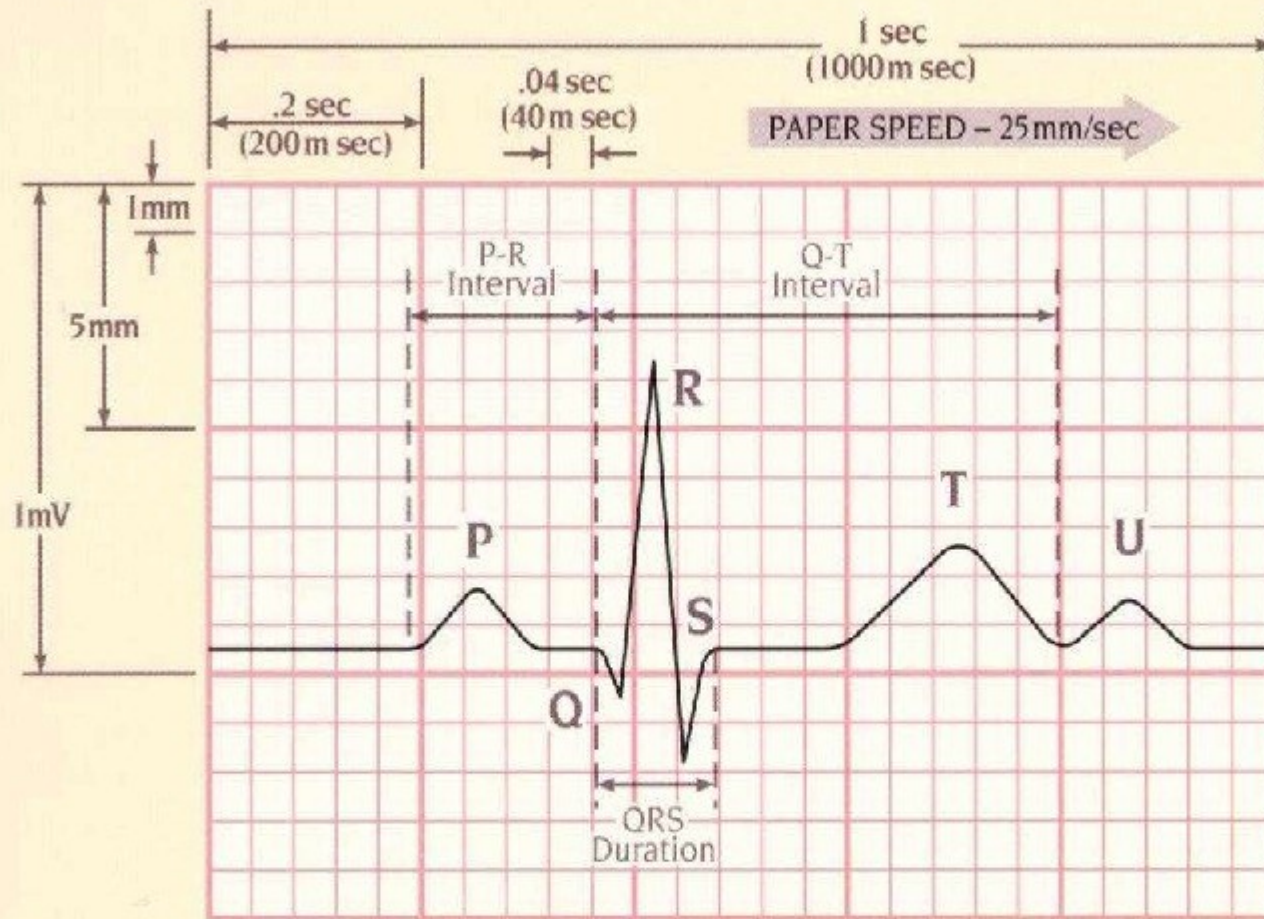
VENTRICLES
REPOLARIZED
600 ms





Vector loop [video](#)

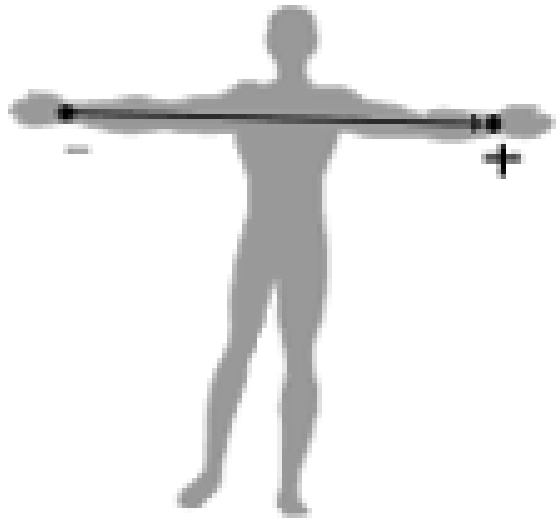




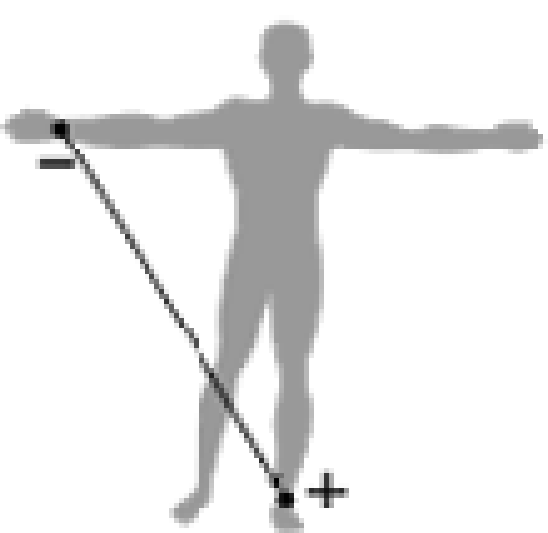
VERTICAL AXIS	1 Small Square = 1mm (0.1mV)
	1 Large Square = 5mm (0.5mV)
	2 Large Squares = 1mV

HORIZONTAL AXIS	1 Small Square = .04 sec (40 m sec)
	1 Large Square = .2 sec (200 m sec)
	5 Large Squares = 1 sec (1000 m sec)

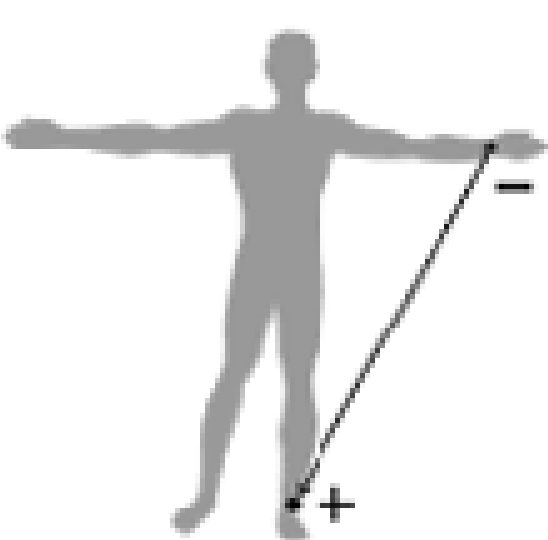
I



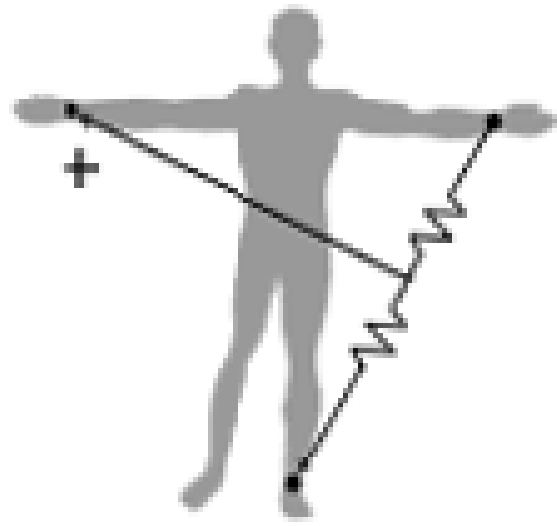
II



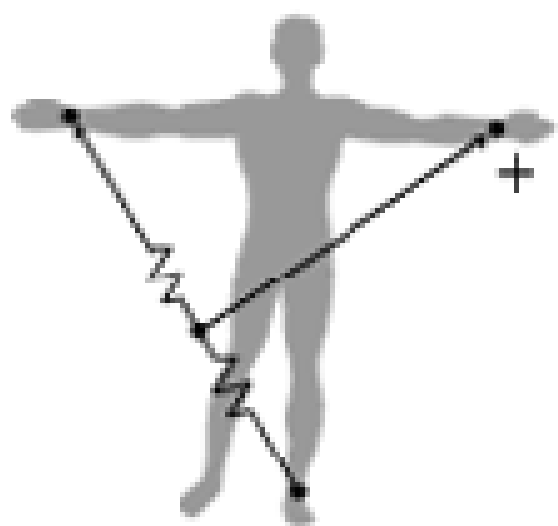
III



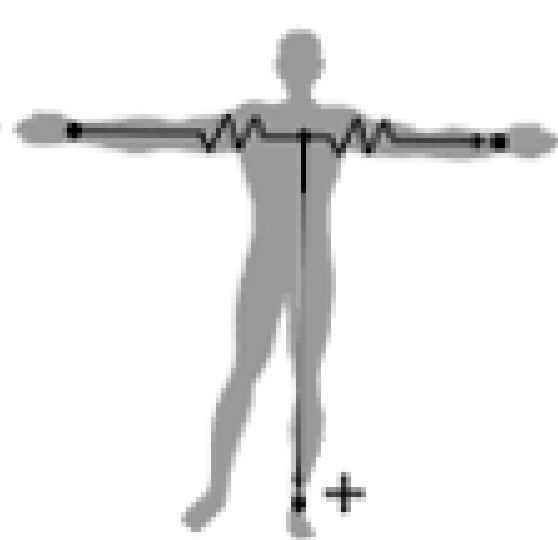
aVR



aVL



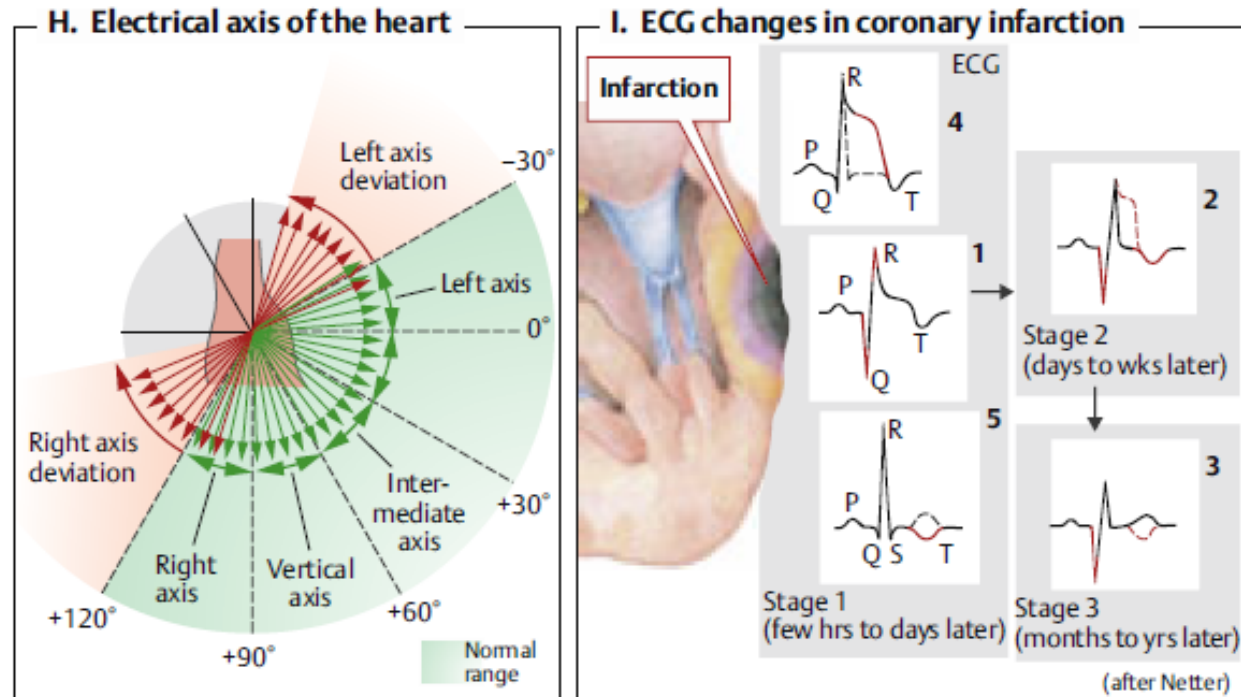
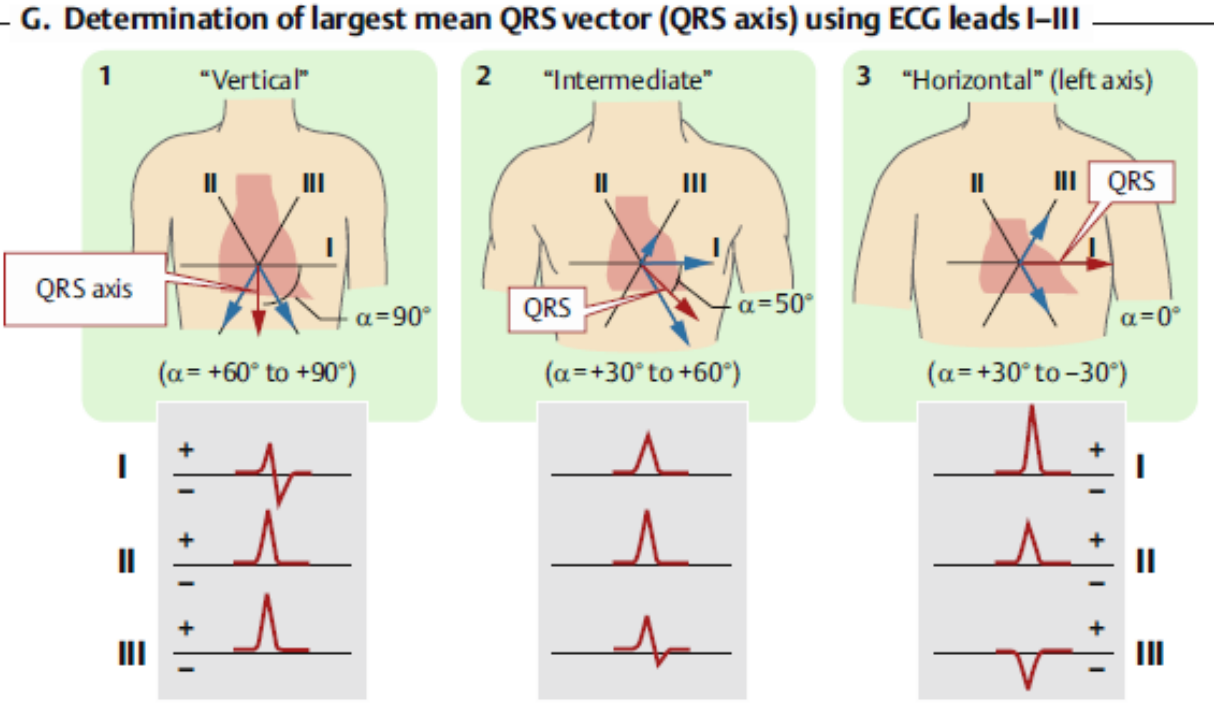
aVF





Electric heart axis

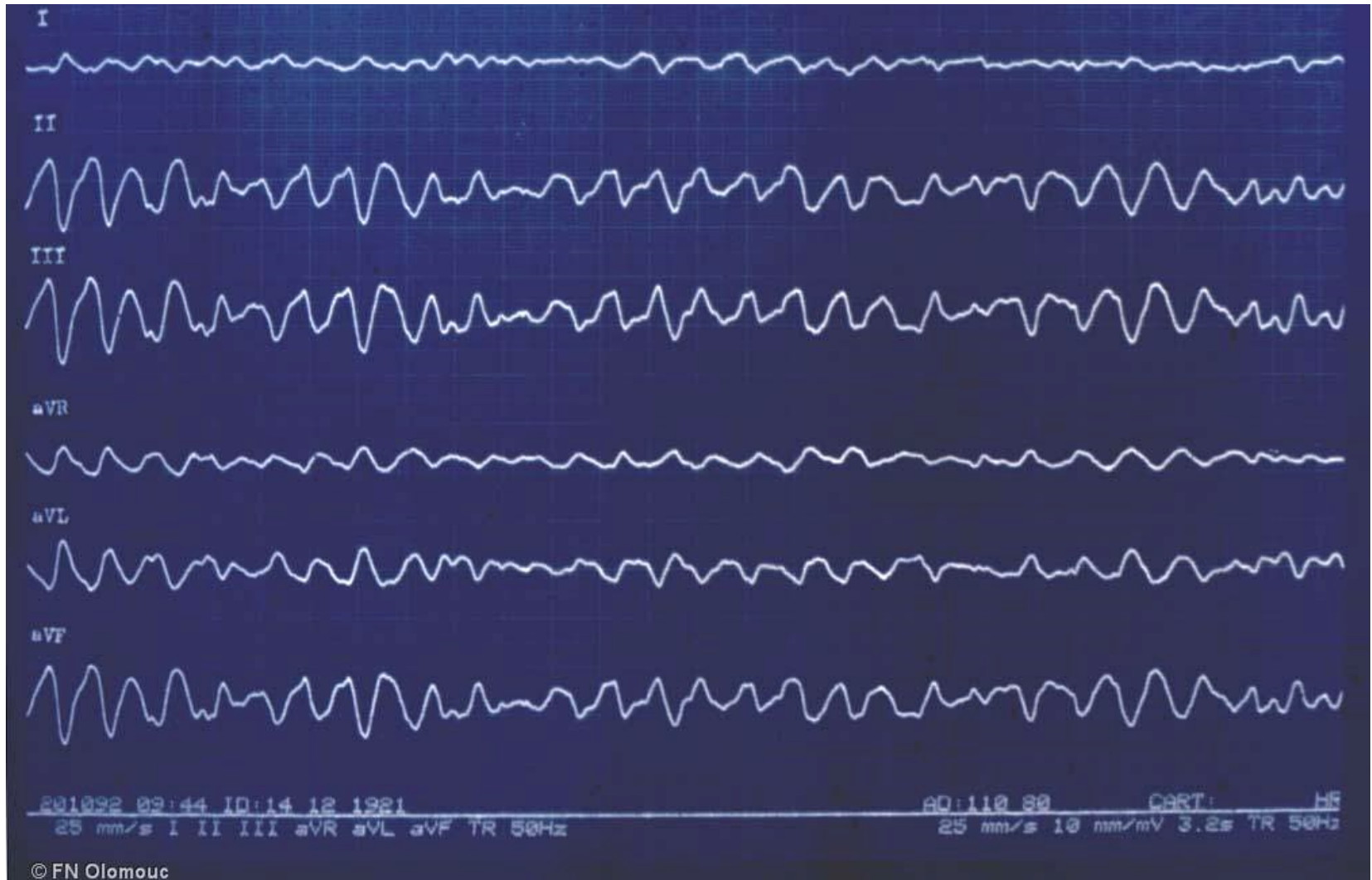
Infarction:
ST segment elevation



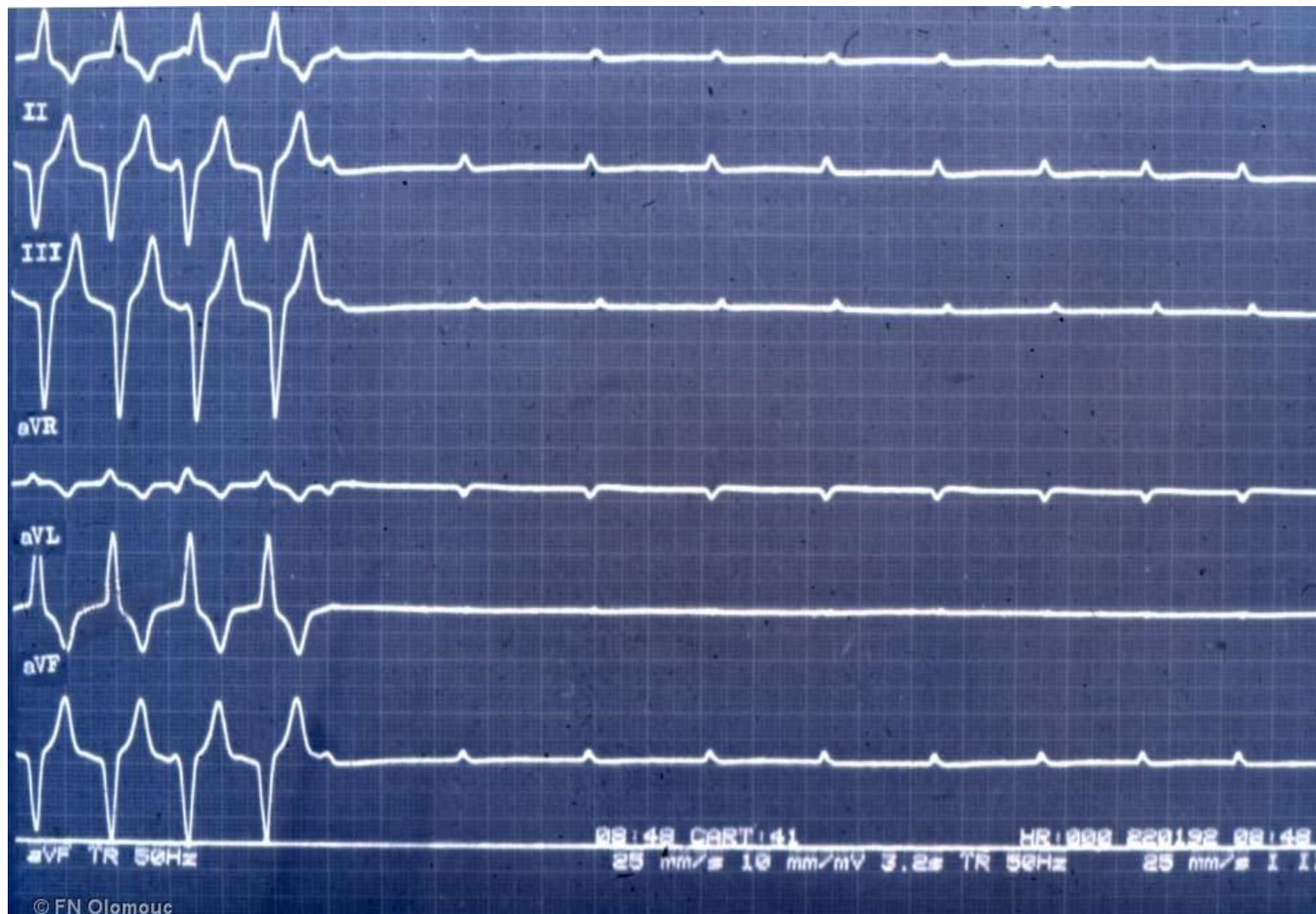
Atrial Flutter



Ventricular Fibrillation



Ventricular arrest



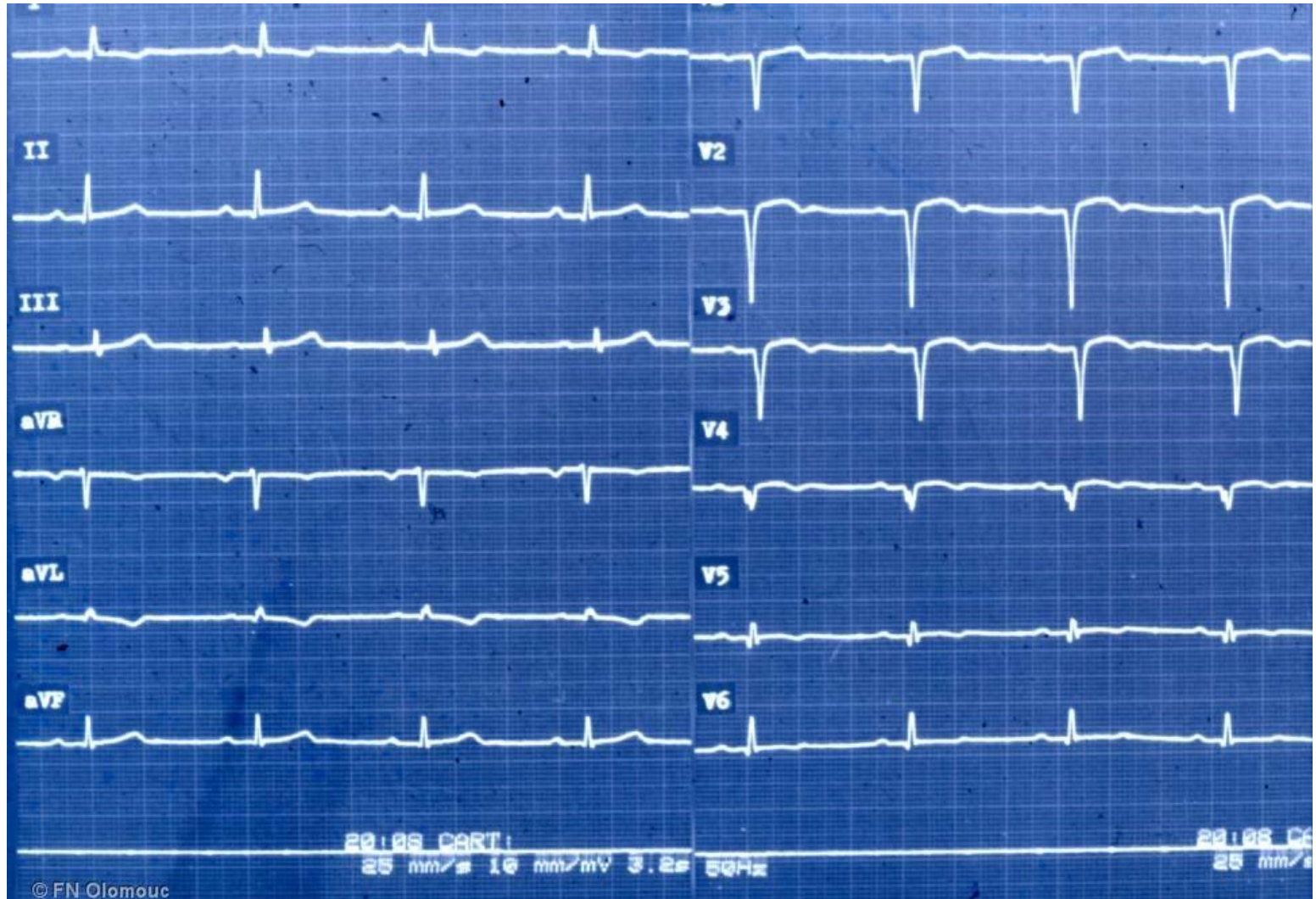
Infarction of Myokard

- coronary vessels blocked
- limited oxygen supply
- necrosis are irreversible

In the picture, we can see a transversal cross-section of the heart (right and left ventricles are visible). The ventricular myocardium is affected by infarction. Extensive tissue necrosis appears as lighter areas in the muscle. This is an extensive anterior scar; the entire wall is affected.



IM chronic



Experiment

Normal record, note:

Pulse rate

Arrhythmia?

Extrasystols?

Shape and length of QRS complex

Length of PQ interval

Electrical axis