

# Hghj

## No Intri NSEC Regulació the contractionary n:

a) Relationship between length and tension

muscle fiber (Frank Starling Law) ownership of the heart to contract in proportion its complete (a more complete, higher volume of projection) to a level where more volume increases are not accompanied by spending

Frank-Starling law: The higher the fill the heart

during diastole, the greater the force decontracció during both sístole. Por, *tension* increases as *diastolic volume* increases until quealcanza a maximum, then tends to decrease.

## Speed Conducció No ales inthe mu senna c. heart

Atrial and ventricular muscle fibers:

0.3 to 0.5 m / sec.

- 1 / 250 speed large nerve fibers.
- 1 / 10 speed skeletal muscle fibers.

Purkinje system: 4 m / sec.

The actio n potential can traverse the entire heart in 220 msec.

The contractionary EC No hea aca muscle lula

normally lasts 300 msec

**Cardiac Cycle:** Top hastacomienzo beats the other. • Delayed 1/seg. from stimulus to ventricular fibrillation

Peri odo de relajció n: **Diastole** Peri odo de contració n: **Systole**

## Empty # of Ventri ass during stole it.

i) Peri odo isovolumic trica contractionary n: Begins vent contraction (decrease  $P^o$  vent). • AV valves closing. • t is expected aum  $P^o$  vent to open semilunar valves (aortic and pulmonary). • ventricular subscribing there.

ii) Peri odo de Expulsió n. AUMT  $P^o$  vent above 80 mmHg, opening semilunar valves. • rapid ejection Period: 1st third empty # 70%. • slow expulsion period: 30% in the next 2 thirds.

iii) Peri odo of isovolumic relaxation n trica. At the end systole (relaxation vent) disminuye  $P^o$  intravent close semilunar valves. • vent Musc continue relaxing without ventricular volume change. • AV valves are opened

iv) Volume Telediastó lico, end-diastolic volume (amount to 110-120 ml). • V. Heartbeat: volume of blood ejected by elventrículo in a heartbeat (about + - 70 ml) • V. Telesistó lico: volume remaining in each vent 40-50 ml. The fraction of k-diastolic volume ejected is called *expulsion or ejection fraction*

**Preload:** the degree of muscle tension when it begins to contract.  $P^o$  diastolic. Passive tension in the ventricular wall when the contraction started and founded% is determined by end-diastolic elvolumen.

**Afterload: the** load against which the strength músculoejerce ventricular contráctil. Poscarga the Paseo de la artery from the vent: " $P^o$  quehe of blood against the ventricular contraction. It is governed by the Frank-Starling: a> preload> fiber elongation and> contractile force.

## Cardi Pumping Regulació n aco

Regulació n Intri NSEC: Frank-Starling mechanism.

Regulació No extrí NSEC: Control of heart by the SNS and PSNS.

**Sinus Node:** specialized muscle tissue. • supero lateral posterior wall of the right atrium • almost completely lacks contractile filaments. • Its fibers connect directly with the atrial muscle fibers. • Basically the intrinsic permeability of the fibers of the node Na .- Every 2 beats increases in P. of Mb

- Voltage threshold is -40 mv.

Located **atrioventricular node** atrial posterior wall

tricuspid valve right behind. • A driving Delay - Delay Conducción V. AV • Allow adequate ventricular filling. • From the sinus node to ventricular contractile muscle is 0.16 seconds. *Reason slow conduction*; few communicating junctions.

**Broadcast n rá ask in Purkinje** fibers **Ventricular Sist** very large, P. Action 1.5 to 4.0 m / sec., 6 times

than ventricular muscle and 150 times greater than some AV node fibers. Musc immediate transmission. vent increased permeability gap junctions.

**0 pulses transmitted Ventricular Cardiac Mús** 0.3 a0 Transmission Speed, 5 m / sec. From endocardium to epicardium egistr only 0.03 sec.