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# Inotropismo y cronotropismo

Factors determining blood pressure. The pressure inside the vessel strictly reflects two different pressures: due to hemodynamic factors (hemodynamic pressure) and due to the pressure of the blood column on the wall (hydrostatic pressure). Although it is low and may be neglected, its influence is usually eliminated by standardizing blood pressure measurement without bloodshed by placing the arm band at the level of the heart. The blood flow pulsates and reflects the pumping action of the heart. During systole, the pressure of ejected blood increases until it reaches a maximum, collectively called systolic pressure (SP); During diastole, the pressure drops to its minimum value or diastolic pressure (DP). Therefore, blood pressure describes a curve that has at least three points: PD (Start/End) and PS. Its length depends on the heart rate. huyera The difference between PS and PD is the difference in pulse pressure. Mean arterial pressure (MAP) refers to the average pressure over the entire cycle and is approximately equal to:  $MAP = PD + 1/3$  of the differential pressure. The physiological variables that control the blood pressure curve are derived from Ohm's law,  $flow = dpa/resistance$ , which follows  $DPA = flow \times resistance$   $DPA = cardiac\ flow \times Peripheral\ vascular\ resistance$  Still heart rate  $\times$  Systolic volume  $\times$  Vasoconstriction + changes in as part of changes in the vascular wall. The pressure gradient between two points in the circuit is directly proportional to the flow and peripheral resistance. In this discussion, cardiac output can replace flow. Floral or cardiac flow it is directly proportional to systolic volume (VES) and heart rate (FC), that is,  $DC = VES \times HR$ . VES and FC are regulated according to government requirements. VES depends on the volume of diastolic filling (preload) and contraction force. Terminants of blood pressure in terms of terms, the pressure in a blood vessel reflects two different pressures: the pressure caused by hemodynamic factors (hemodynamic \ xal mical pressure) and the pressure caused by the pressure in the wall of the blood column \ XC3 \ XB3N ( hydrostatic pressure). pressure \ xc3 \ xa1). Although the latter is small and can be neglected, its influence is usually eliminated by the standardization of the measurement of blood pressure without blood by placing the bracelet on the upper part of the arm at the heart level. The adneum circulation is pulsating and reflects the pumping action of the heart. fajisosa During the Sys \ XC3 \ xadstole, the blood pressure pressure increases until it reaches a maximum, commonly called systolic pressure (SP); During the diastole, the pressure drops to its maximum value, the diastolic pressure (DP). Therefore, blood pressure describes a curve that has at least three points: PD (initial/final point) and PS. Its duration depends on the heart rate. The difference between PS and PD is the pressure difference of the wrist. The medium blood pressure (MAP) refers to the average pressure during the entire cycle and is approximately equal to:  $map = Pd + 1/3$  of pressure difference.

## Cinco propiedades de miocitos cardíacos

Propiedad	Concepto	¿Qué es?	¿Dónde ocurre?
Batmotropismo	Excitabilidad	Capacidad de respuesta a estímulos	Sarcolema
Dromotropismo	Conductibilidad	Velocidad de propagación de potenciales de acción	Sarcolema
Cronotropismo	Frecuencia de descarga	Frecuencia de generación de potenciales de acción	Sarcolema
Inotropismo	Contractilidad	Fuerza de contracción del músculo cardíaco	Sarcómera
Lusitropismo	Relajación	Relajación del músculo cardíaco	Sarcómera

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### Algunas definiciones

#### CRONOTROPISMO

- Modificación de la velocidad o periodicidad de un fenómeno en relación con el tiempo. Se emplea con frecuencia en relación a la frecuencia cardíaca.
- Es la modificación de la frecuencia de ciertos fenómenos que se producen en sucesión rítmica, como los latidos del corazón.

#### DROMOTROPISMO

- Es la propiedad de algunas fibras nerviosas cardíacas de conducir impulsos como resultado de estimulación simpática o parasimpático

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**Propiedades cardíacas**

- CRONOTROPISMO:** Regula la frecuencia cardíaca. Se refiere a la capacidad de las células cardíacas de responder a estímulos eléctricos de una manera regular y sincronizada.
- DROMOTROPISMO:** Regula la velocidad de conducción de los impulsos eléctricos a través del sistema de conducción cardíaco.
- INOTROPISMO:** Regula la fuerza de contracción del músculo cardíaco. Se refiere a la capacidad de las células cardíacas de generar fuerza de contracción en respuesta a estímulos eléctricos.
- LUSITROPISMO:** Regula la relajación del músculo cardíaco. Se refiere a la capacidad de las células cardíacas de relajarse después de la contracción.

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**Efecto Inotrópico POSITIVO**  $\uparrow$  Fuerza de contracción

**Tratamiento de fallas del bombeo**

- Insuficiencia cardíaca congestiva
- Fibrilación auricular paroxística
- Fúter auricular
- Taquicardia paroxística supraventricular

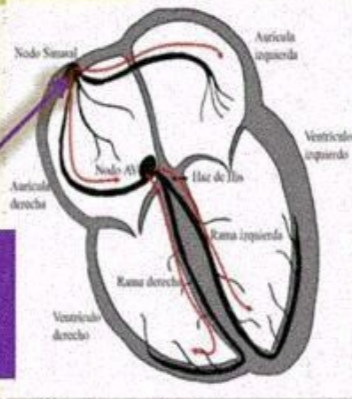
*Sono insuficiente*

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## Automatismo (Cronotropismo)

- **Nódulo SA:** 60 a 100 potenciales de acción por minuto.
- **Nódulo AV:** 40 a 60 potenciales de acción por minuto.
- **Fibras de Purkinje:** 15 a 40 potenciales de acción por minuto.

• El impulso cardíaco se genera espontáneamente en el nodo sinuauricular (NSA)



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The flexibility of the large arterial vessels allows them to deliver this volume, which is ejected in systole and withdrawn in diastole. When arteries lose their elasticity, which happens with age, they are unable to produce the volume sold. As freshness remains relatively constant, an increase in vascular stiffness increases systolic blood pressure. This systolic hypertension is characteristic of the elderly. On the other hand, about 85% of the circulating blood volume is in the veins; its unreadable recorded volume fluctuates up to 500 ml without changing the blood pressure. Peripheral Resistance Peripheral resistance is a major factor in determining diastolic pressure. 90% of the resistance of the arterial vessels through the blood passage is in the arteriole. The contraction of smooth muscle tone maintains their balance between vasoconstriction and dilation. Peripheral resistance is also changed by structural changes in blood vessels (arteriosclerosis) and changes in blood viscosity. The main vasoconstrictors are norepinephrine, angiotensin II, endothelin, vasopressin and some prostaglandins such as PG-F2- $\beta$ . On the other hand, vasodilators include acetylcholine, histamine, prostacyclin, prostaglandin E2, bradykinin, and aropeptin.

Blood pressure control is a physiological variable that varies within certain limits during the day. It decreases during sleep and increases with exercise, diet or sexual activity. It is under the control of various Neuro-Gum systems that work by changing cardiac conduction and peripheral resistance. One of the described is the control of the autonomic nervous system. It senses changes in blood pressure through baroreceptors located in the circulatory system. These are: the rene-angiotensin-bogosterone system is a narrowing blood vessel and stimulates renal retention. Kalikeins-Cinein-System, Naturé Vasodilator © Tico (caused by Péredida sodium, the main Volomic, urine, factor) and a mediator threatened with prostate liberation; Tico tico hormones highlighting Natur © Tótic or Atriotic Pétic. Hormone resistant to vasoprine or impact is a strong short result that the body gives to maintain blood pressure for a serious mortgage. Its secretion causes over 10 % of desires. Wolomomy