



# Fisiologia Cardiovascular

## Aula 4: MECANISMOS DE CONTROLE CARDIOVASCULAR

# PRESSÃO ARTERIAL

**Pedro Paulo Soares**

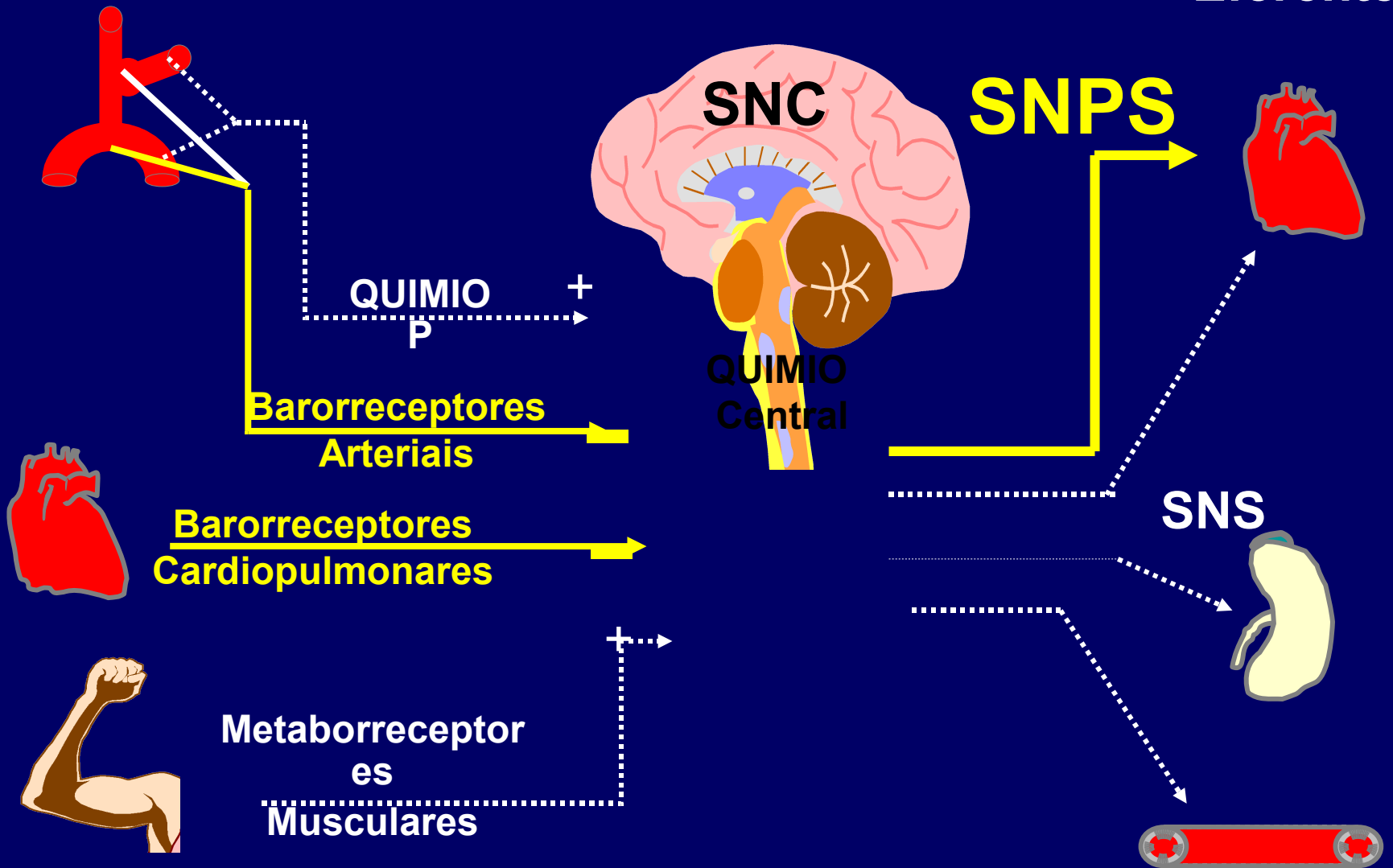
Departamento de Fisiologia e Farmacologia

*ppsoares@vm.uff.br*

# Controle Autônomo CV

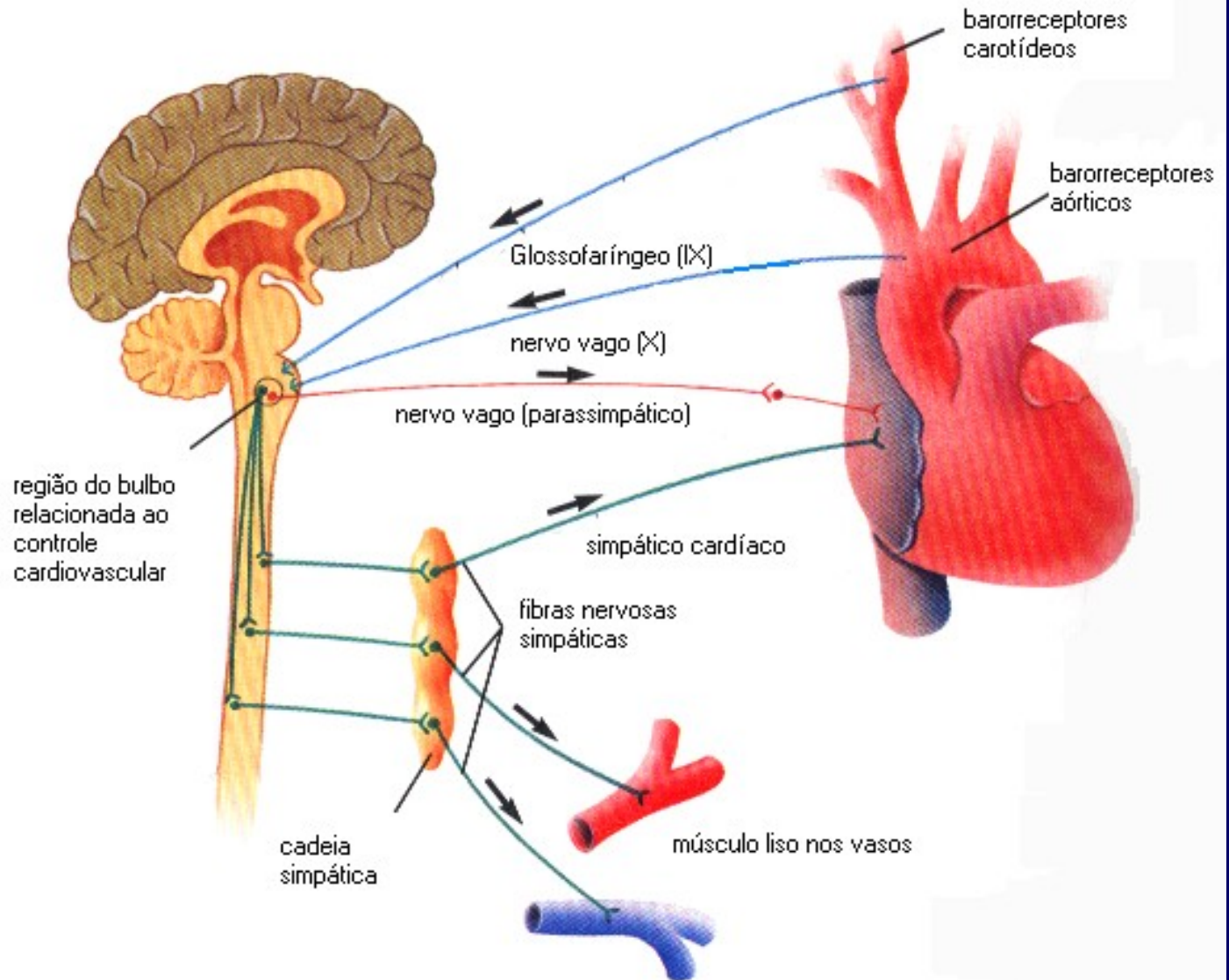
Aferentes

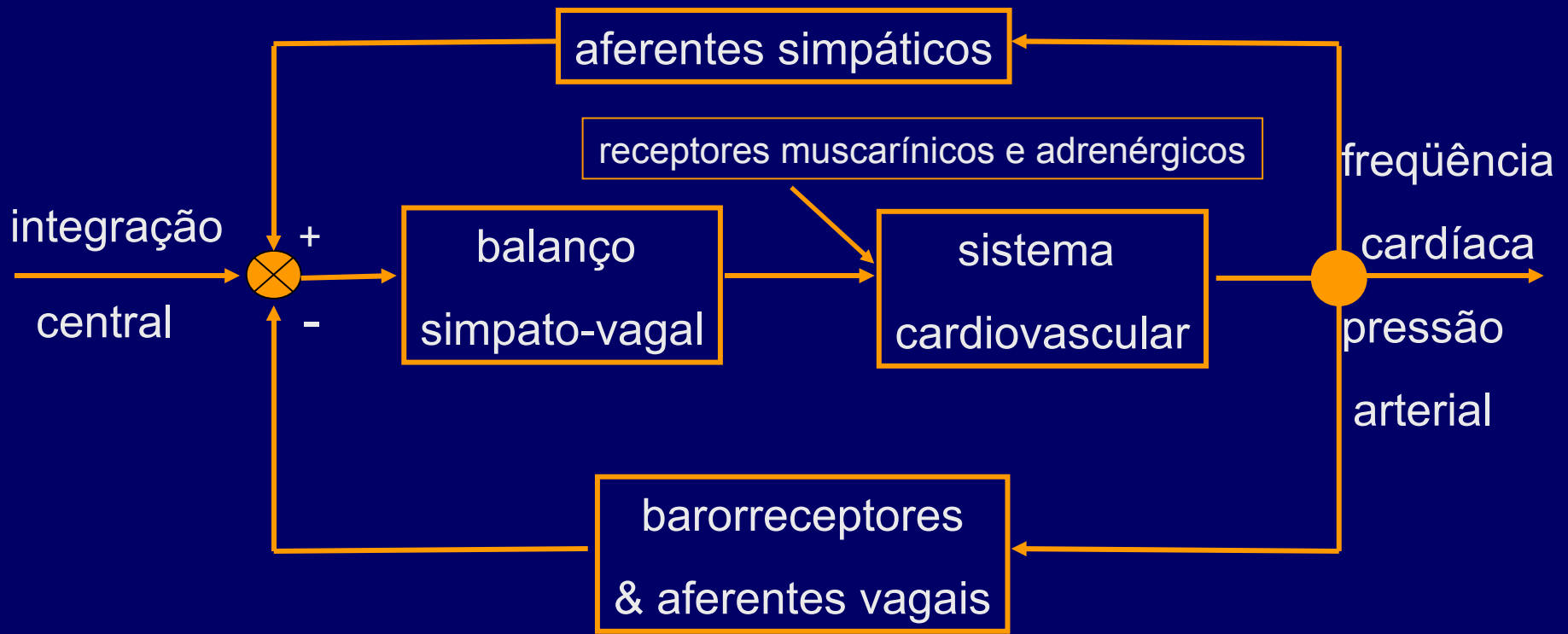
Eferentes



*Floras et al JACC. 1993 ; 27:72A.*

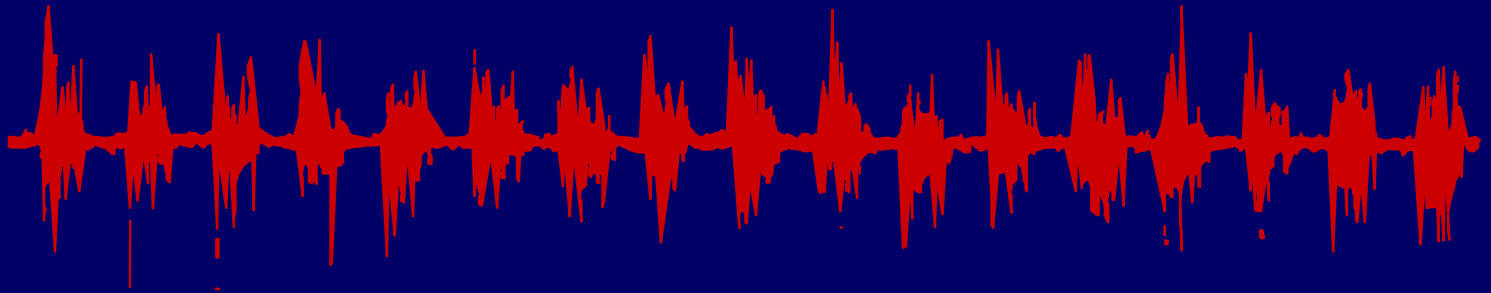
# BARORREFLEXO



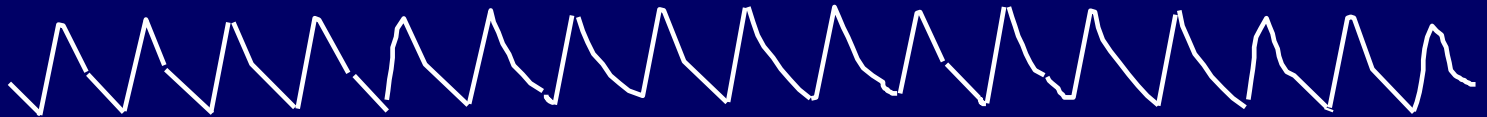


# ATIVIDADE DO NERVO DEPRESSOR AÓRTICO

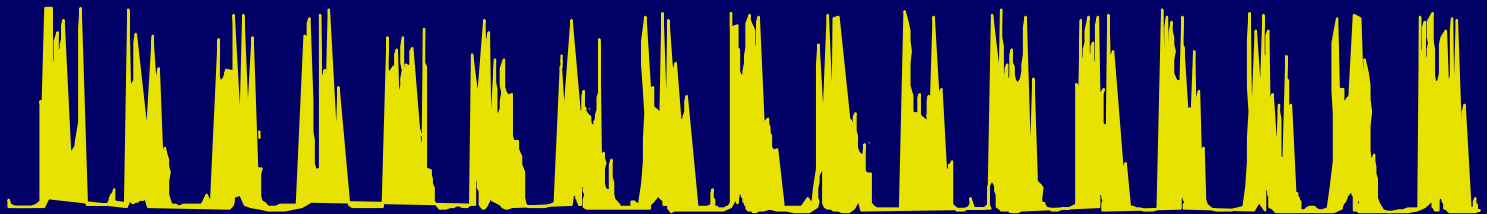
DESCARGA DOS  
PRESSORRECEPTORES



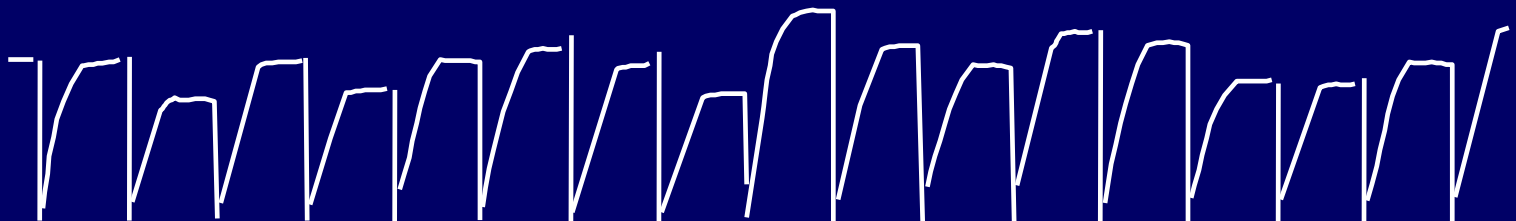
PRESSÃO  
ARTERIAL



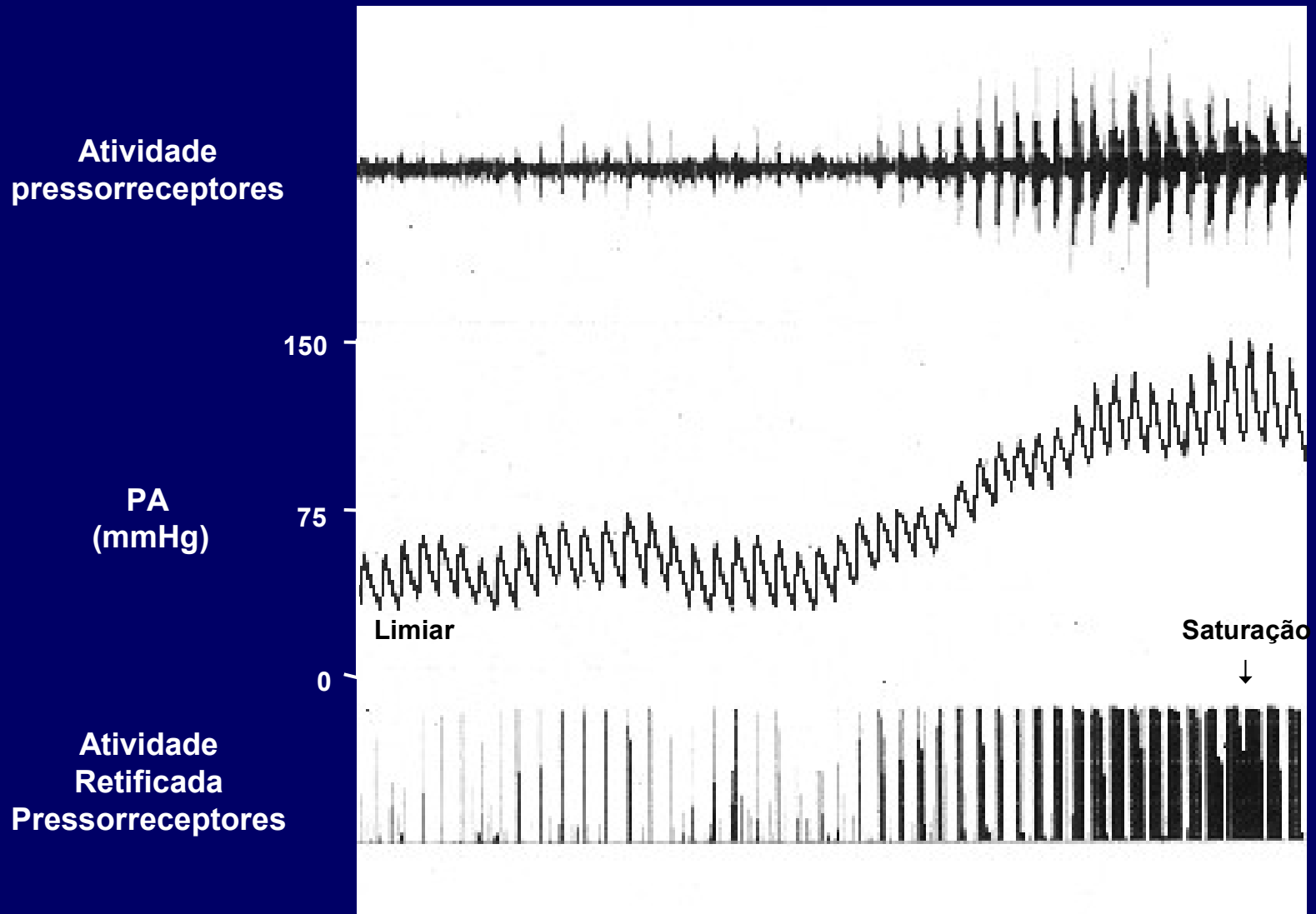
ATIVIDADE  
RETIFICADA



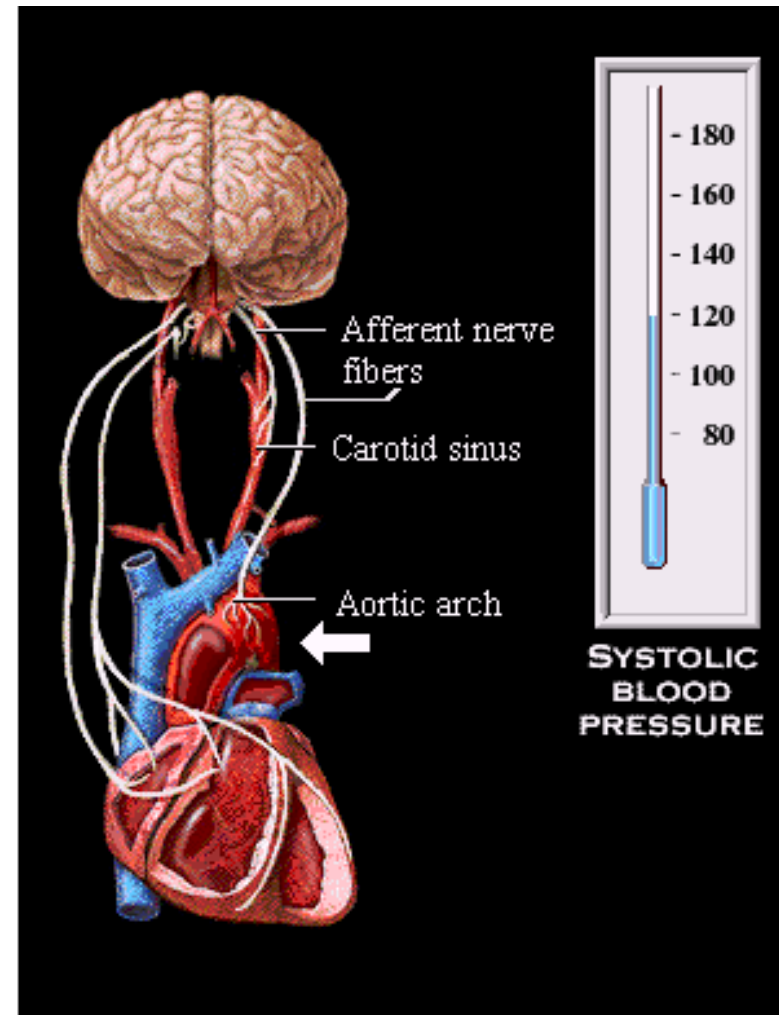
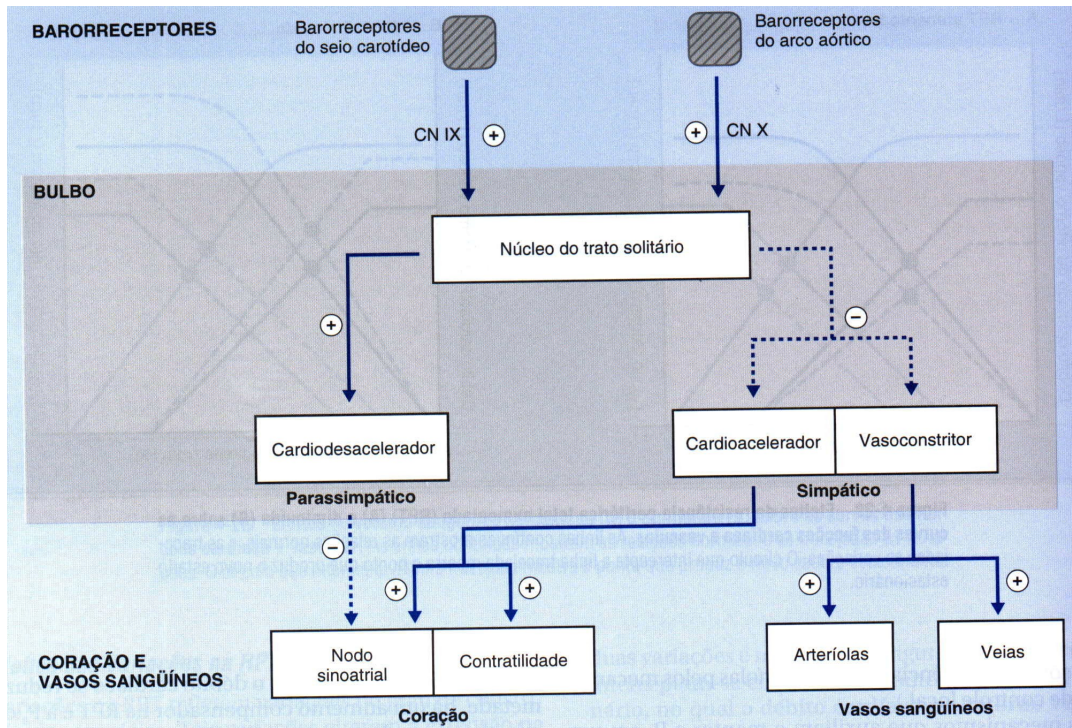
ATIVIDADE  
INTEGRADA



# FUNCIONAMENTO DOS PRESSORRECEPTORES (DO LIMIAR Á SATURAÇÃO)

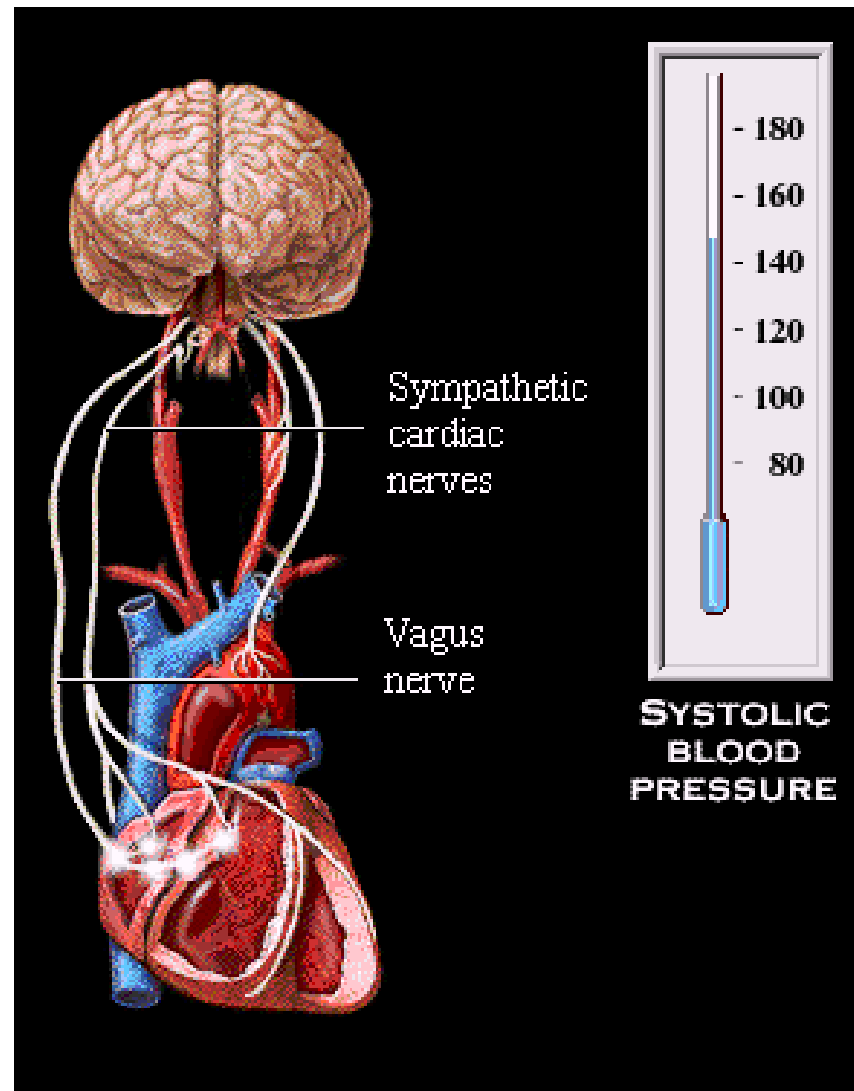
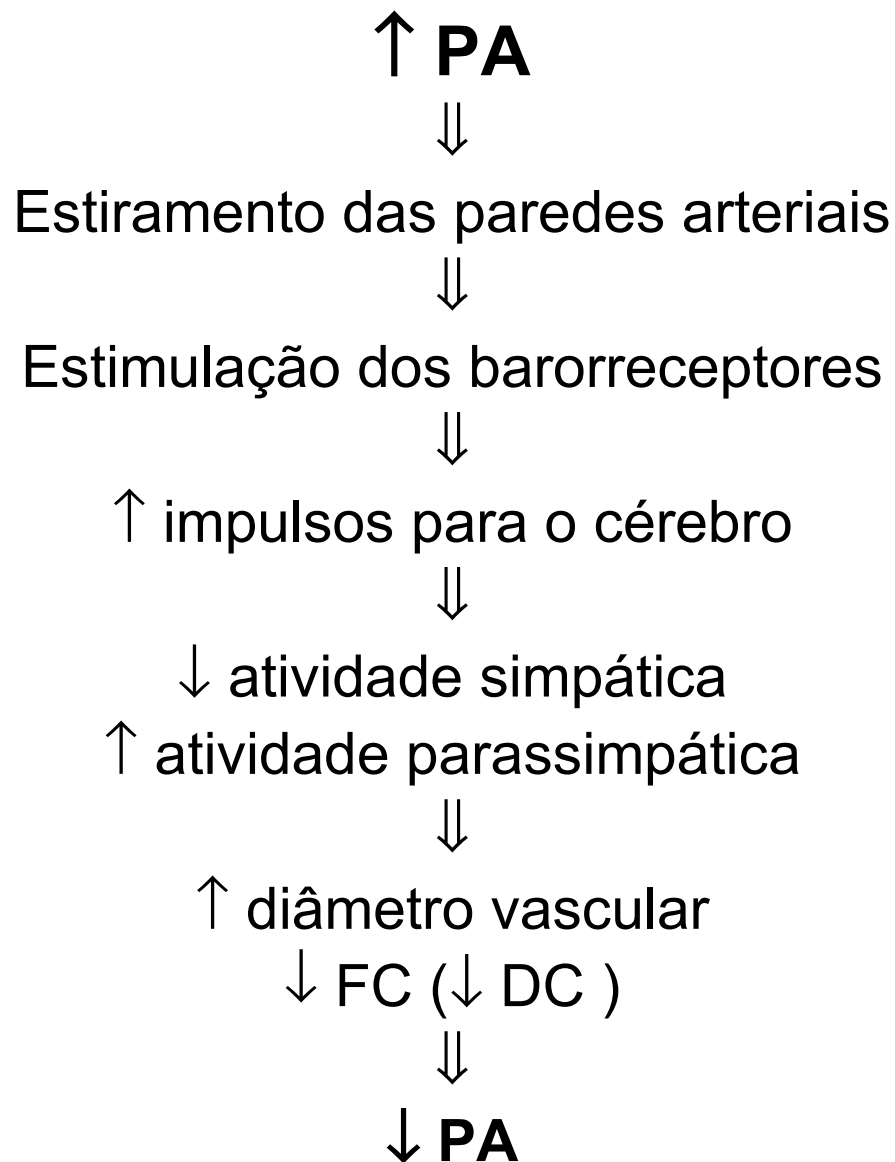


# CONTROLE DE PA: Barorreflexo arterial





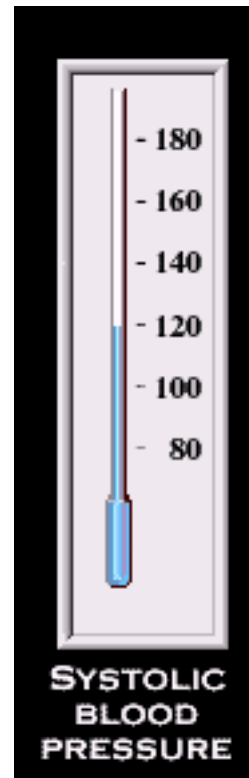
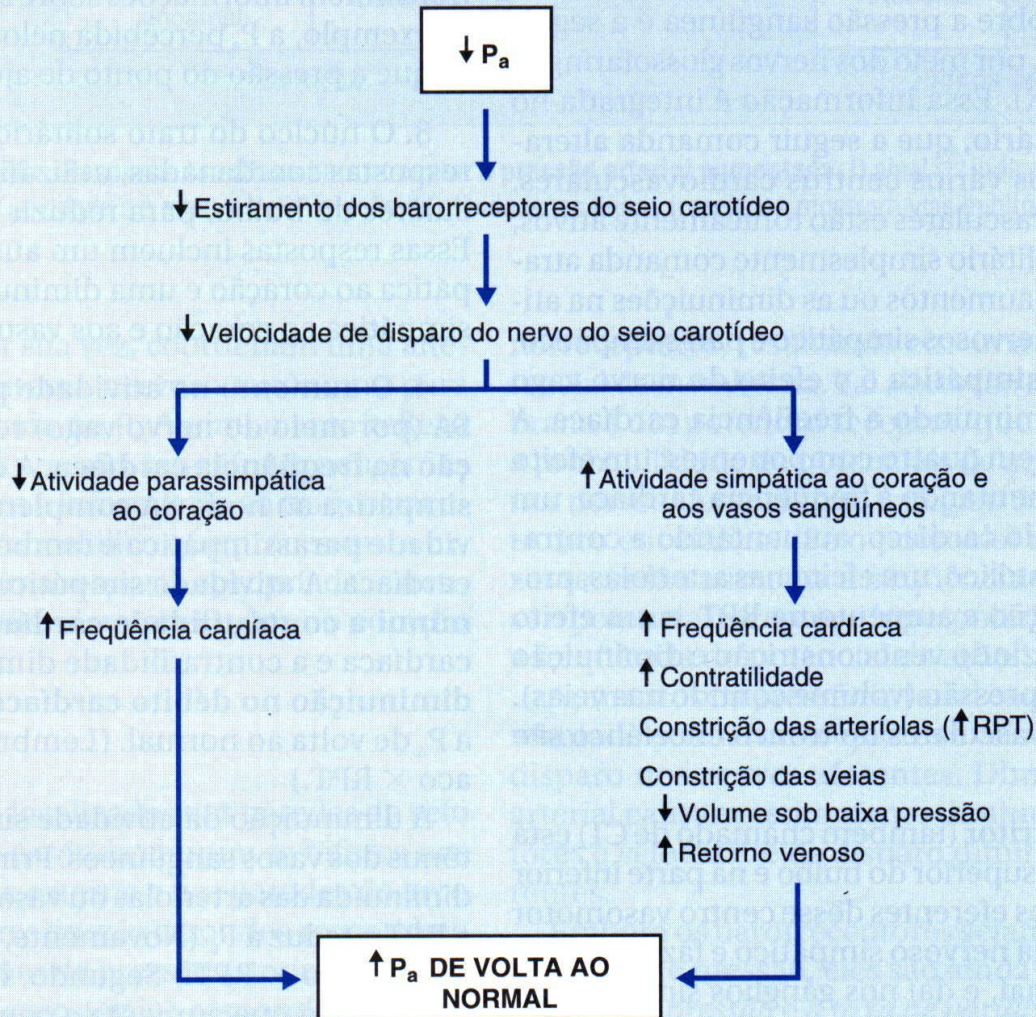
# CONTROLE DE PA: Barorreflexo arterial





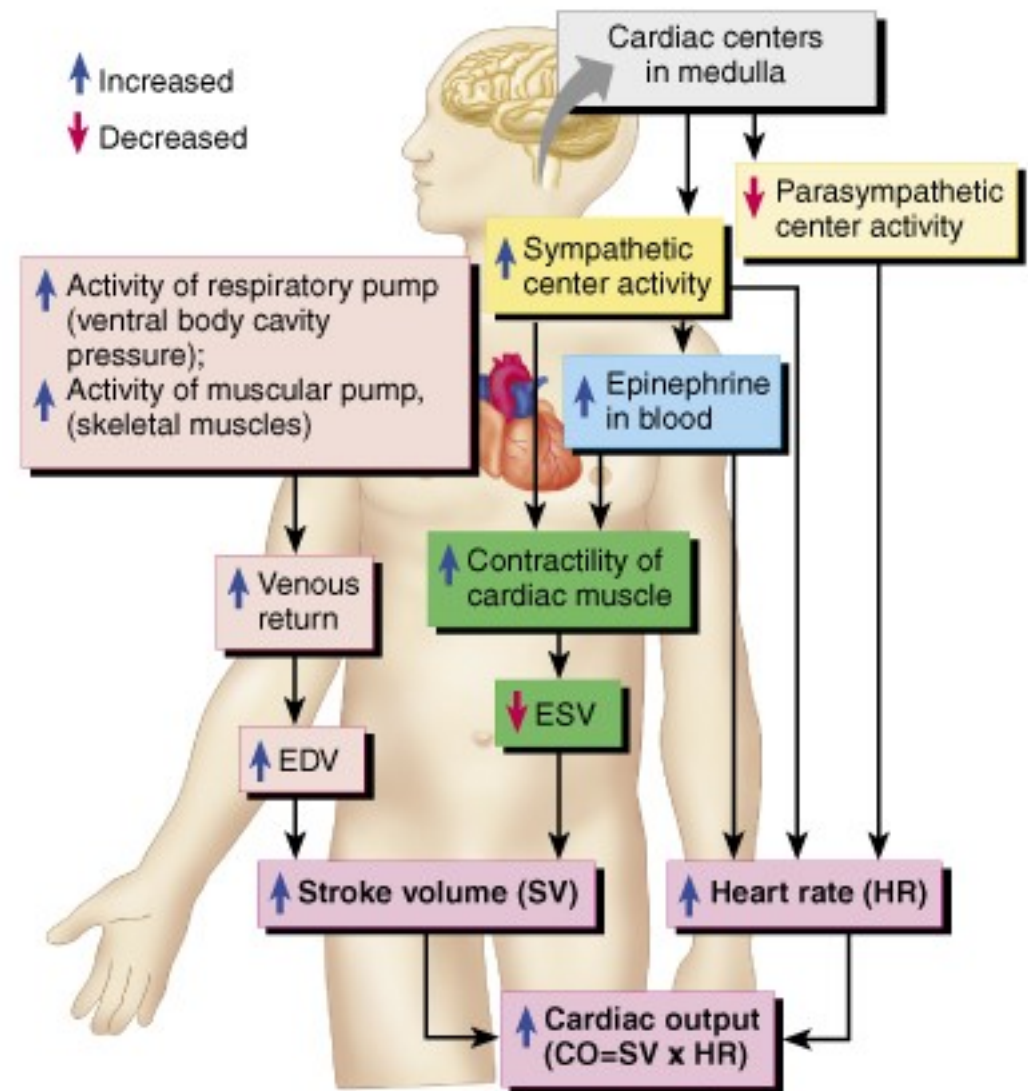
# CONTROLE DE PA: Barorreflexo arterial

## REFLEXO BARORRECEPTOR

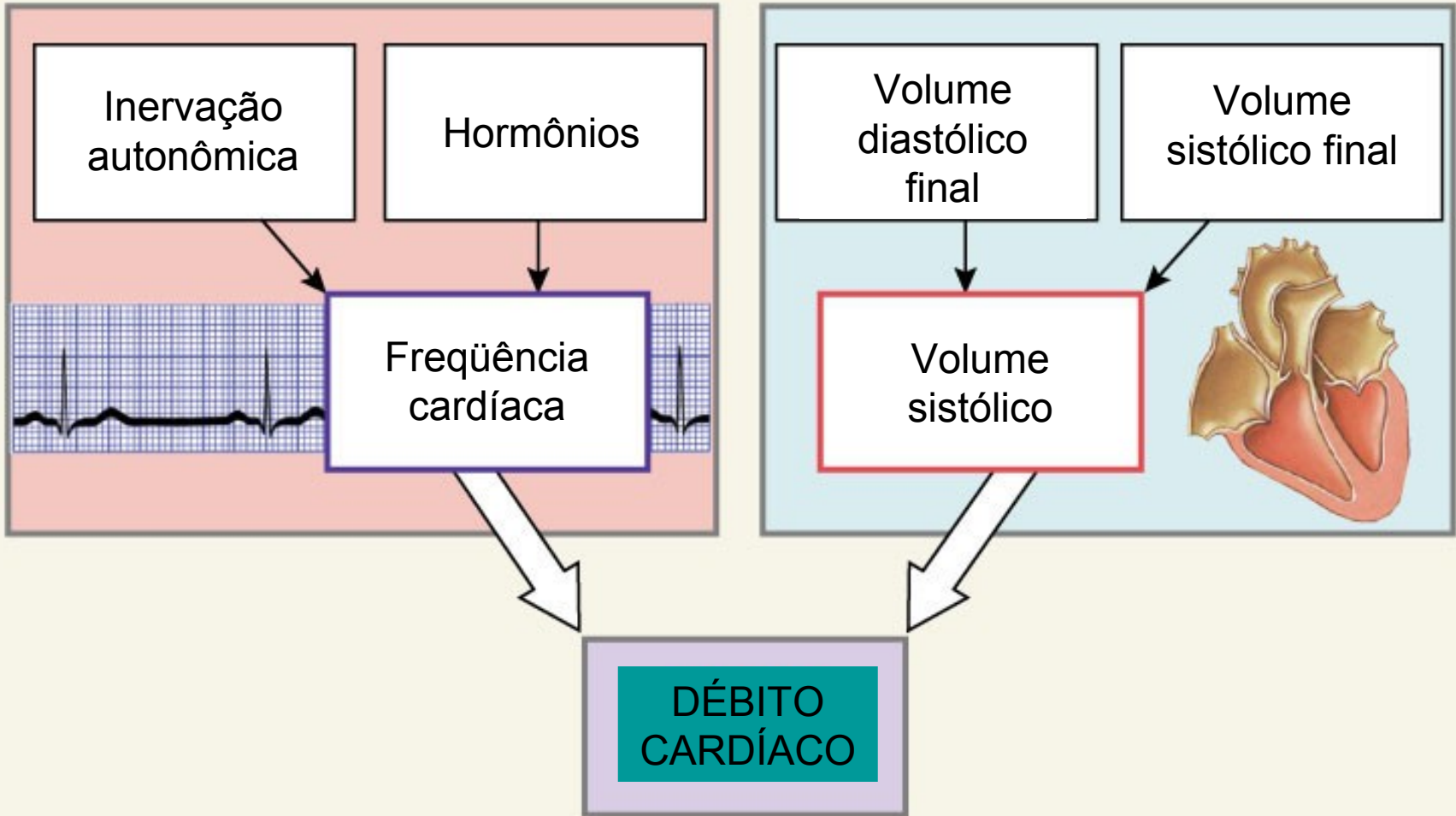


# DÉBITO CARDÍACO

- DC:  
determinado  
pelo retorno  
venoso,  
controle neural  
e hormonal

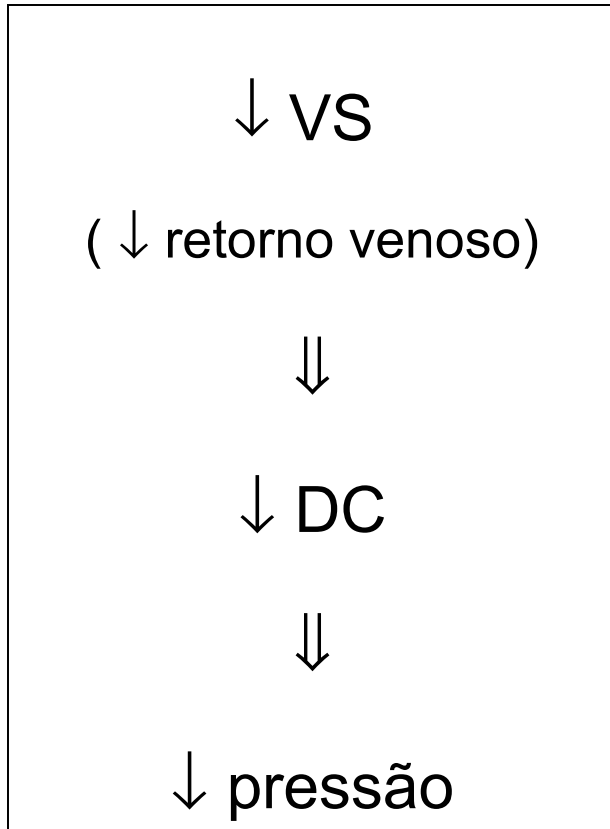


# DÉBITO CARDÍACO

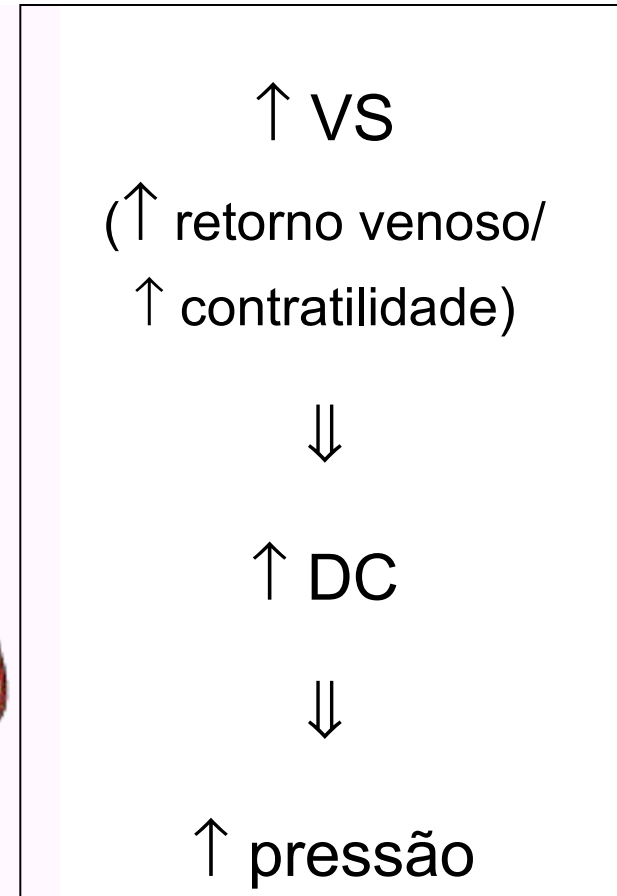
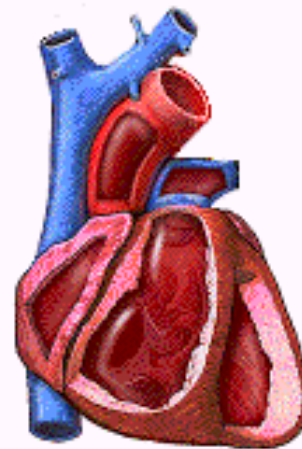
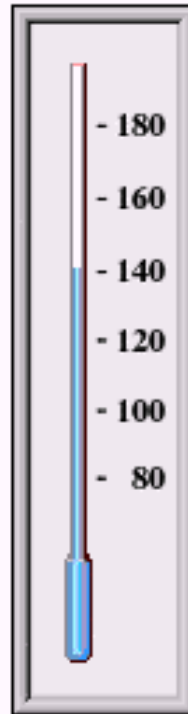




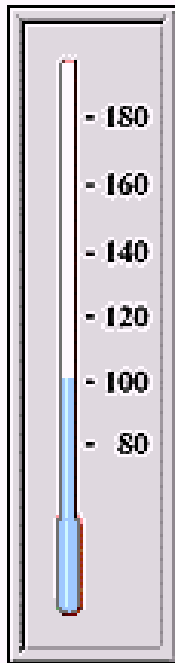
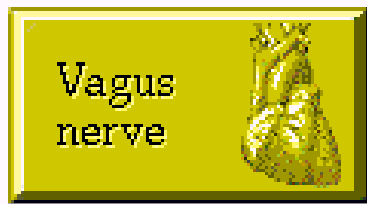
# EFEITO DO DÉBITO CARDÍACO NA PA: VS



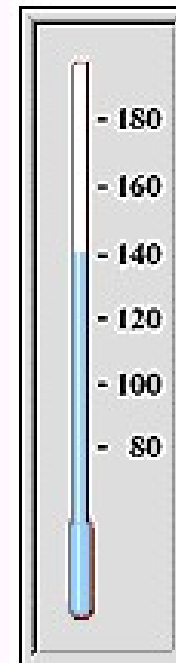
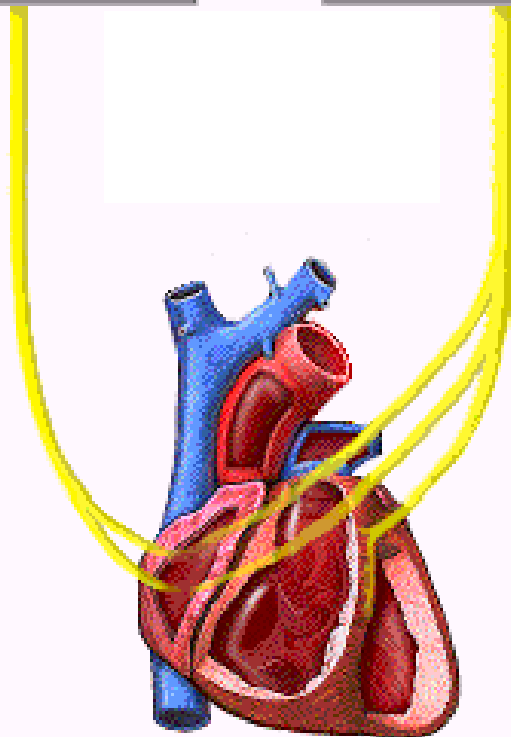
SYSTOLIC  
BLOOD  
PRESSURE



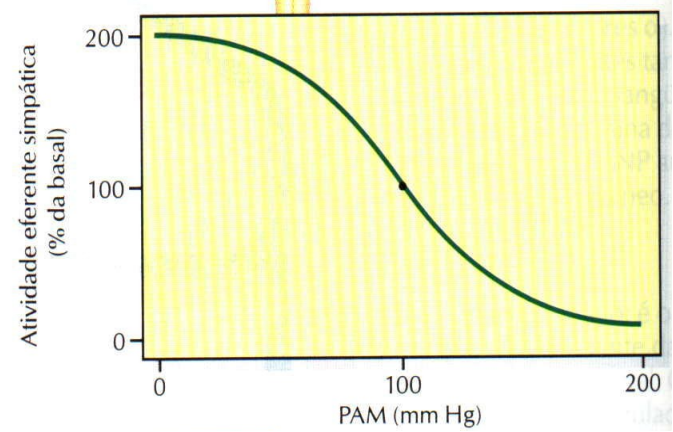
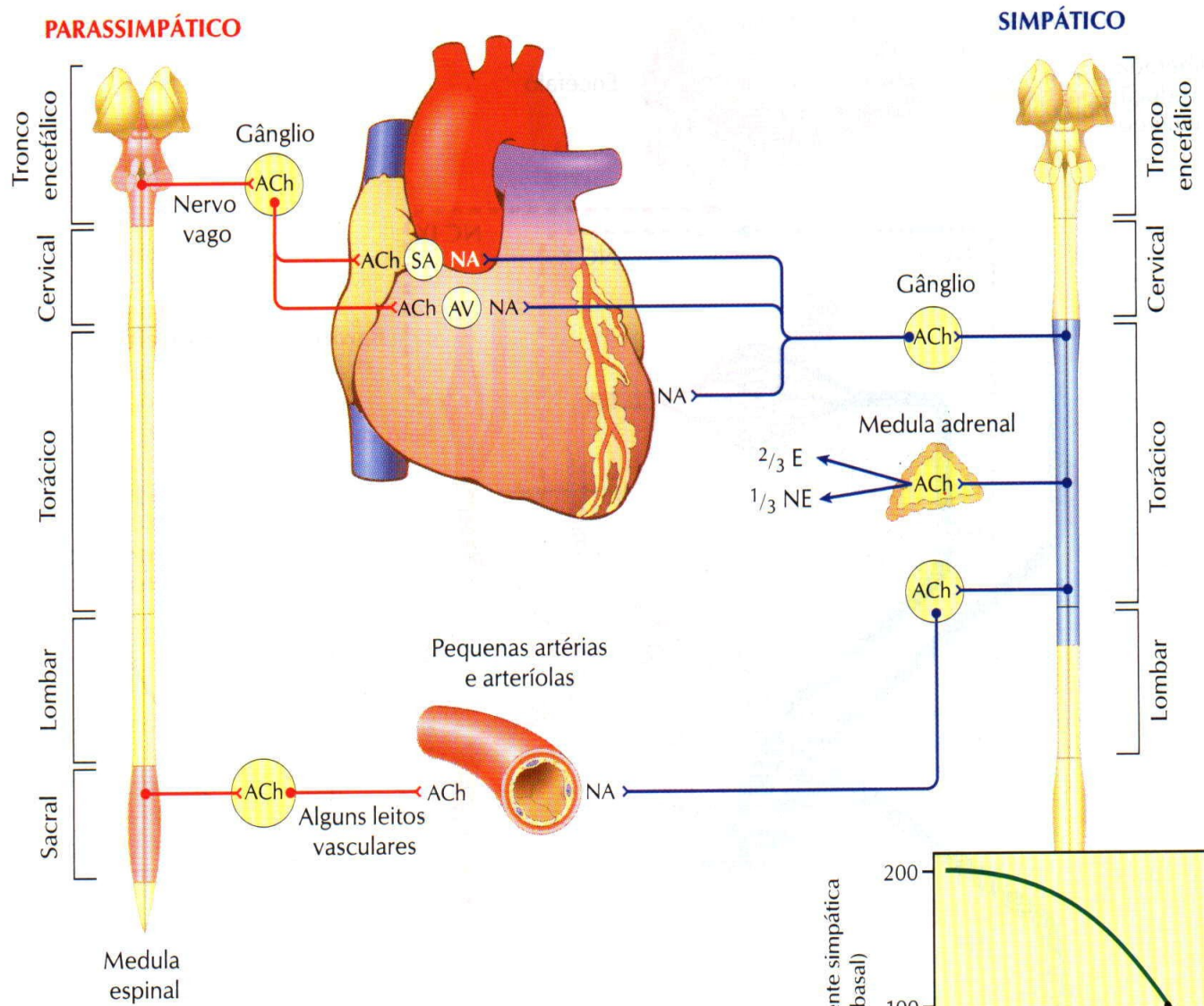
# EFEITO DO DÉBITO CARDÍACO NA PA: FC

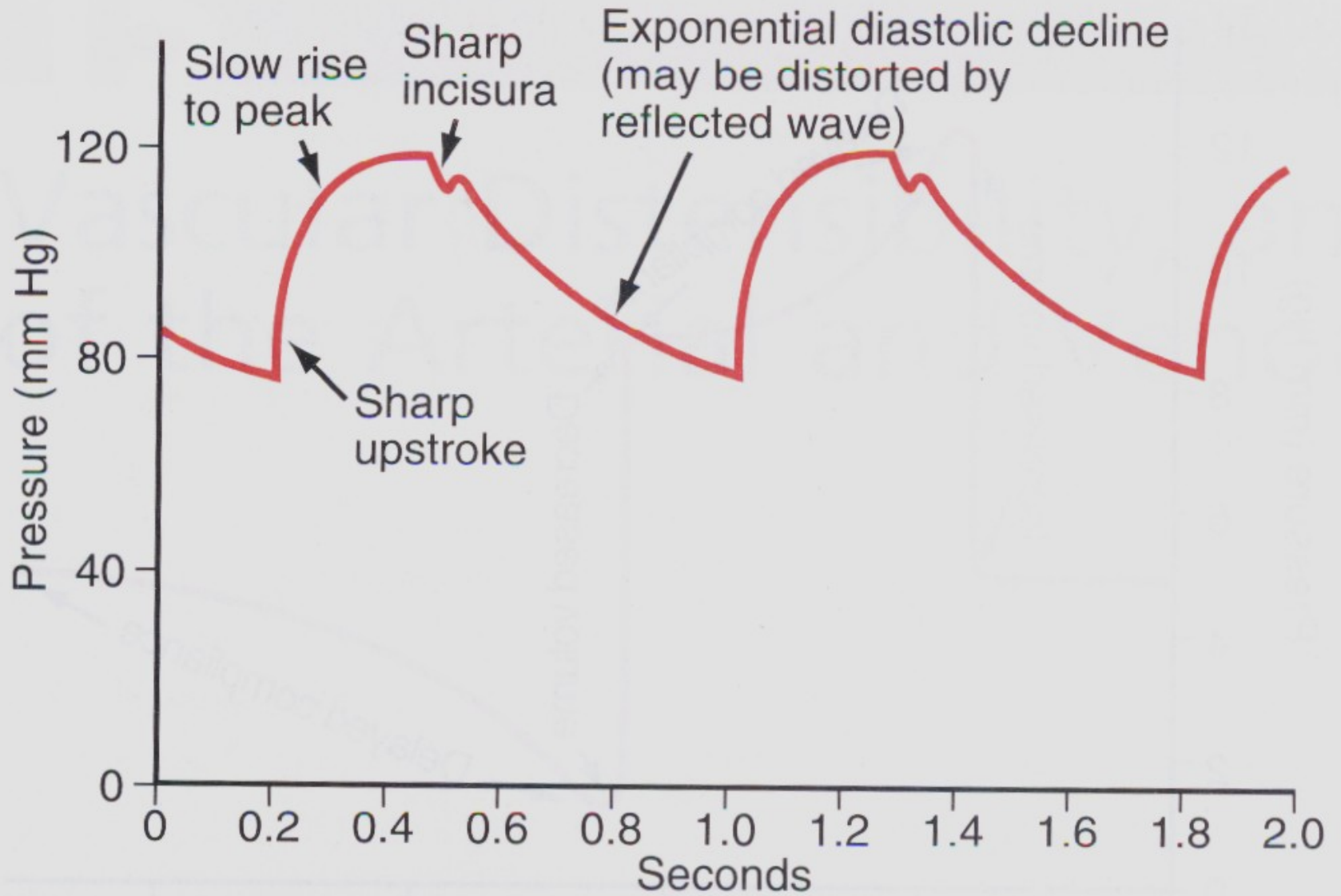


Decreased heart rate  
↓  
Decreased cardiac output  
↓  
Decreased blood pressure



Increased blood pressure  
↑  
Increased cardiac output  
↑  
Increased heart rate





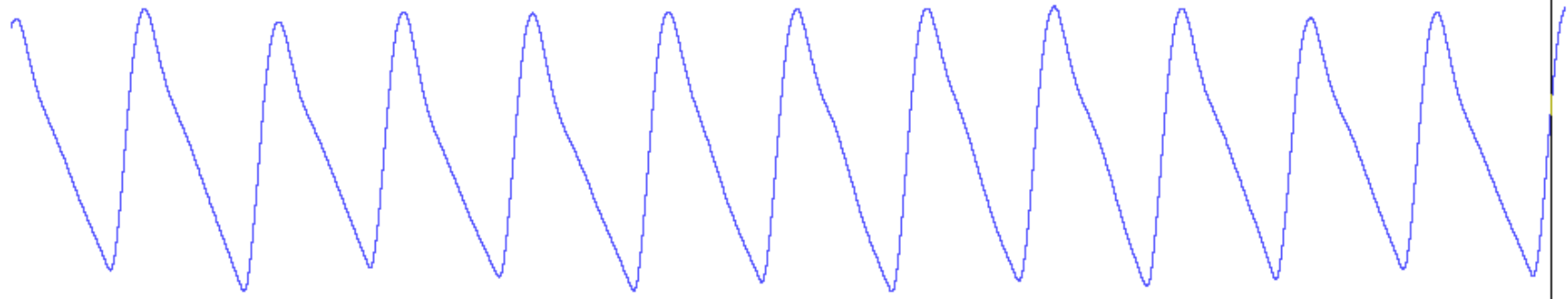
**FIGURE 15-3**

Pressure pulse contour recorded from the ascending aorta. (Redrawn from Opdyke DF: Fed Proc 11:734, 1952.)

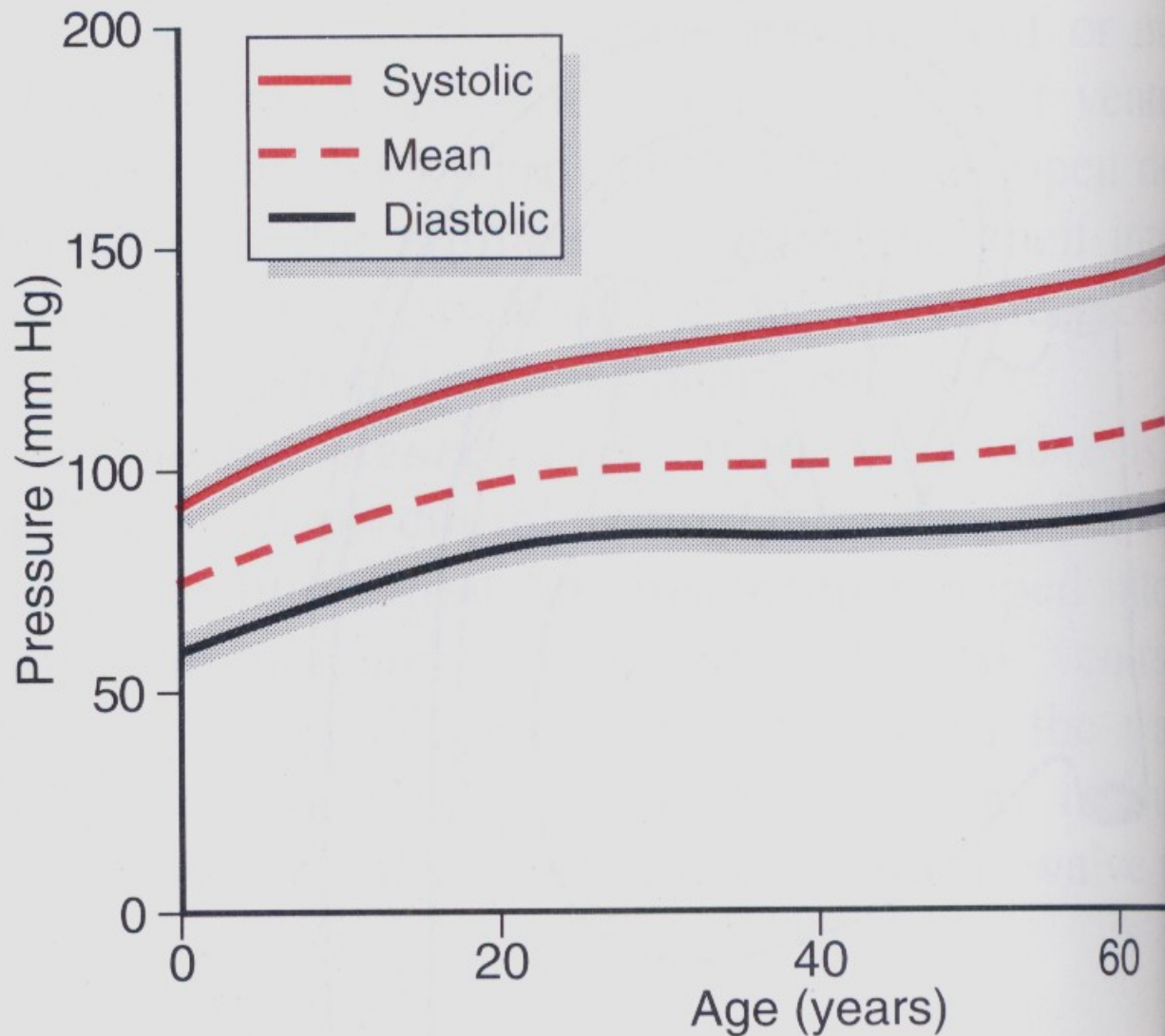


177.91

120.96  
1=1 mmHg

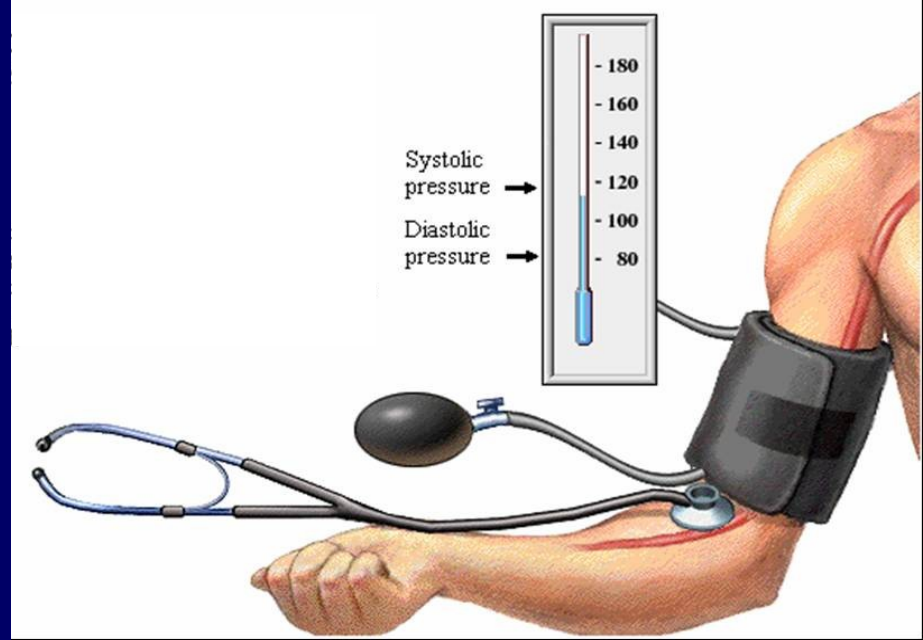
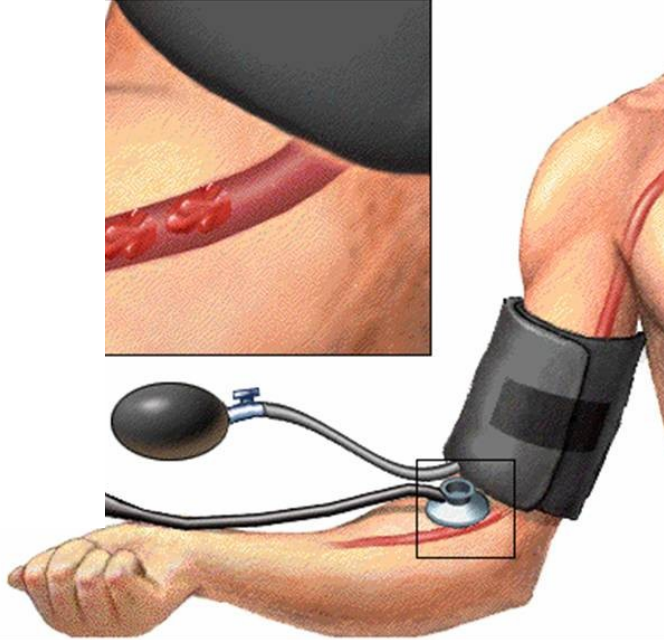


52.91

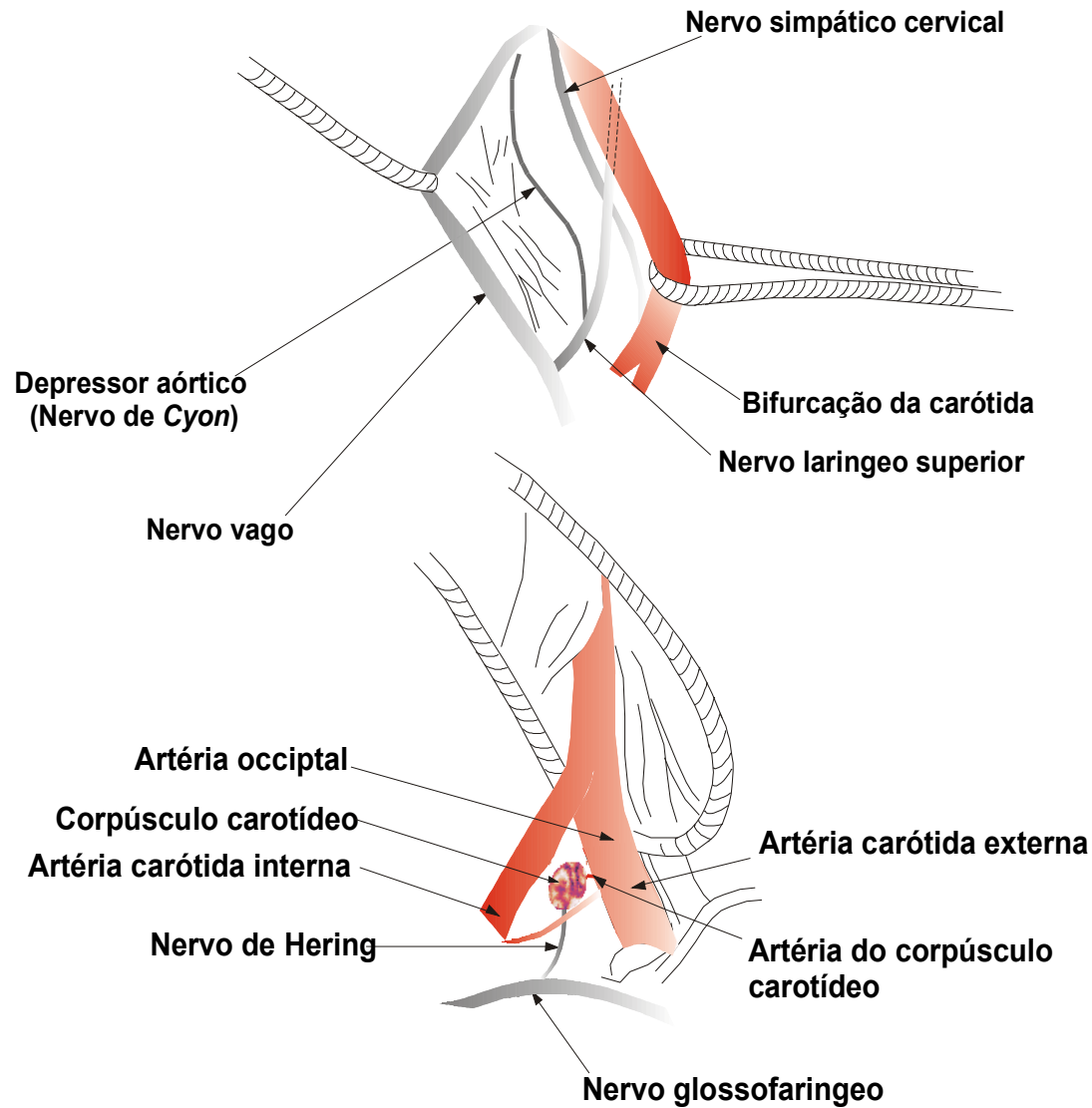


**FIGURE 15-8**

Changes in systolic, diastolic, and mean arterial pressures. The shaded areas show the approximate normal range.



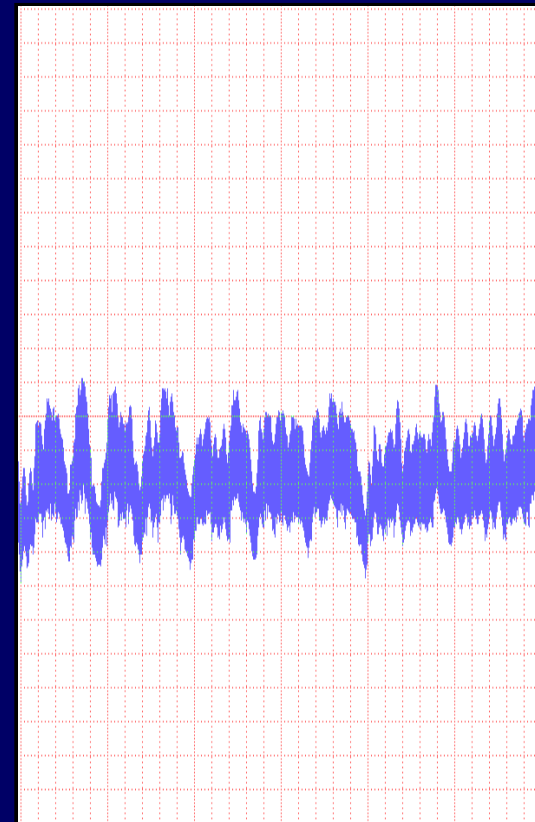
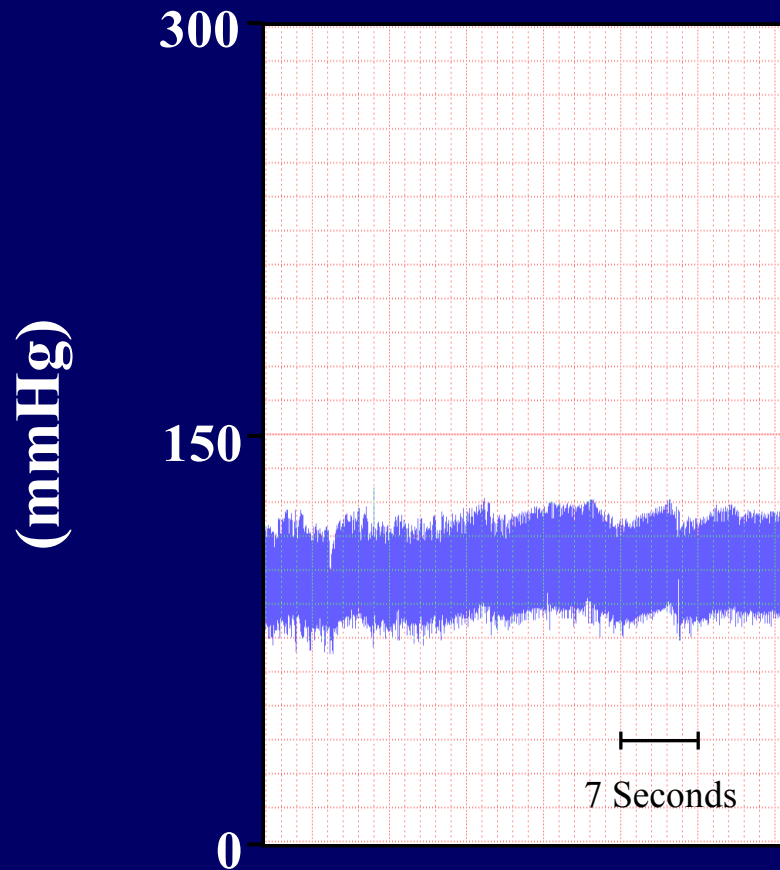
# A DESNERVAÇÃO SINO-AÓRTICA



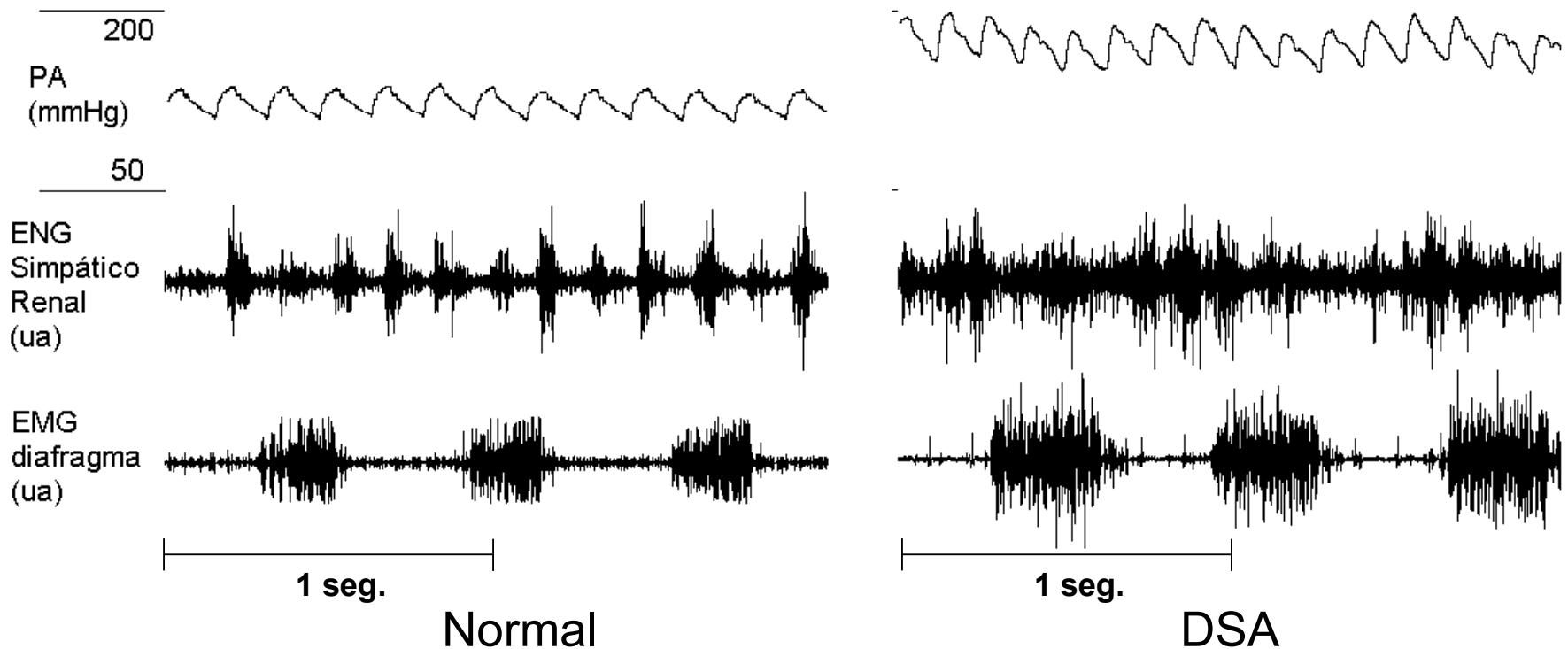
# REGISTRO DA PRESSÃO ARTERIAL (DSA)

CONTROLE

24 hs



# Séries temporais



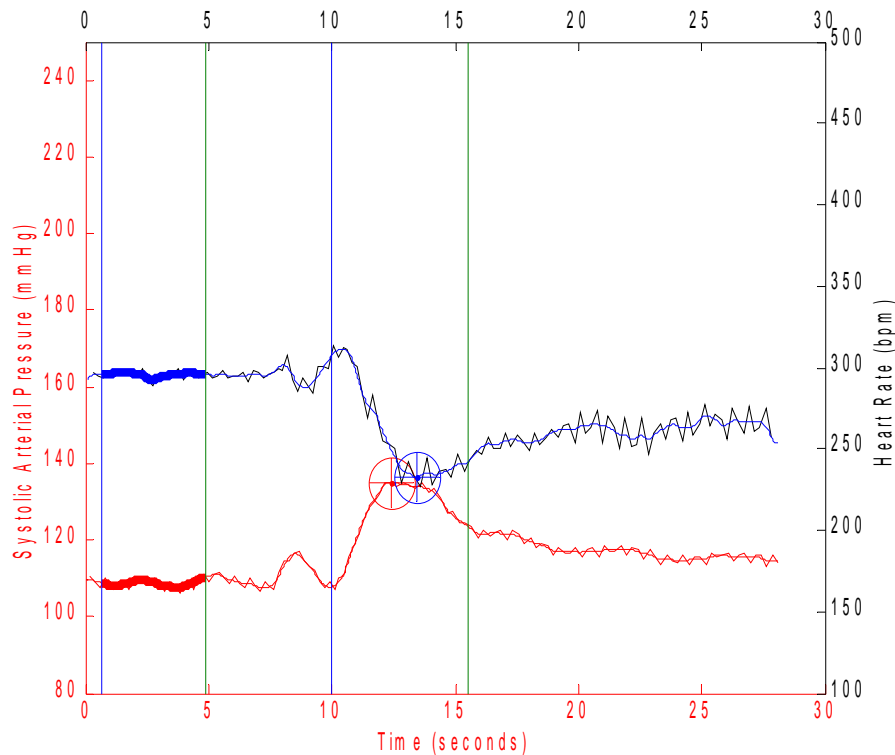
**Exemplo de sinais biológicos do sistema cardio-respiratório. A partir do topo da figura, Pressão Arterial PA (mmHg), o eletroneurogram ENG simpático renal (unidades arbitrárias, ua) e o eletromiograma EMG do diafragma (ua) no rato acordado controle (esquerda) e no rato desnervado sinoaórtico DSAa (direita). (Ushizima, 2000)**

# INFUSÃO DE DROGAS VASOATIVAS

bolus de fenilefrina

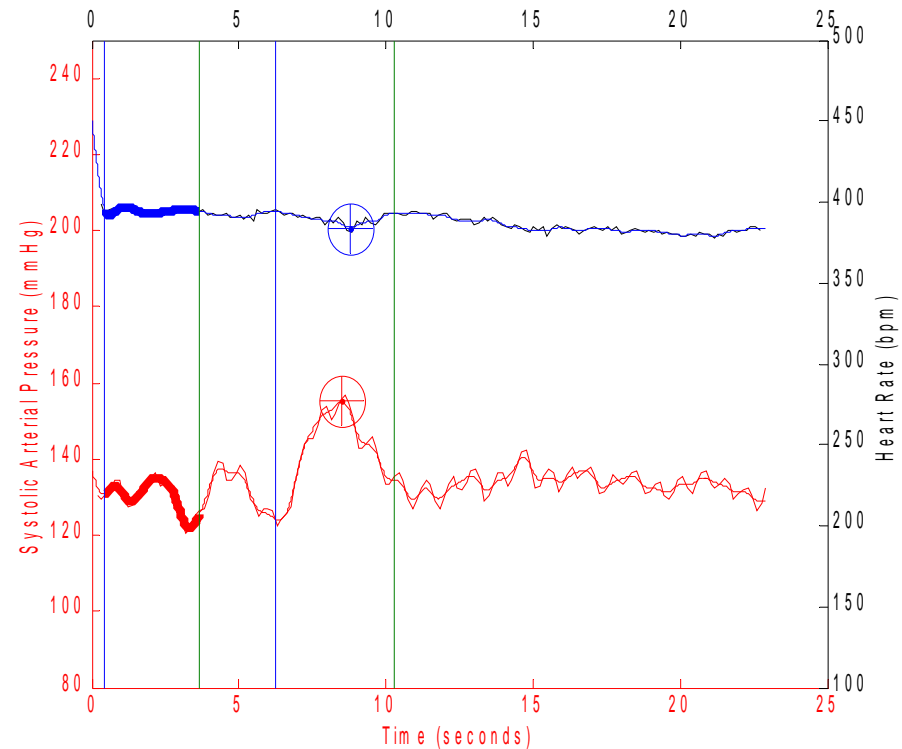
ANIMAL INTACTO

BRS Index for Bradycardia for rato1414.dvw = -2.3892bpm/mmHg



DESNERVAÇÃO DOS PRESSORRECEPTORES

BRS Index for Bradycardia for 14ratoad.dvw = -0.40915bpm/mmHg





# DETERMINANTES DA MAP

**Pressão arterial média**

**Volume sanguíneo**

Ingestão  
de fluidos

Perda de  
fluidos

**Débito cardíaco**

FC

VS

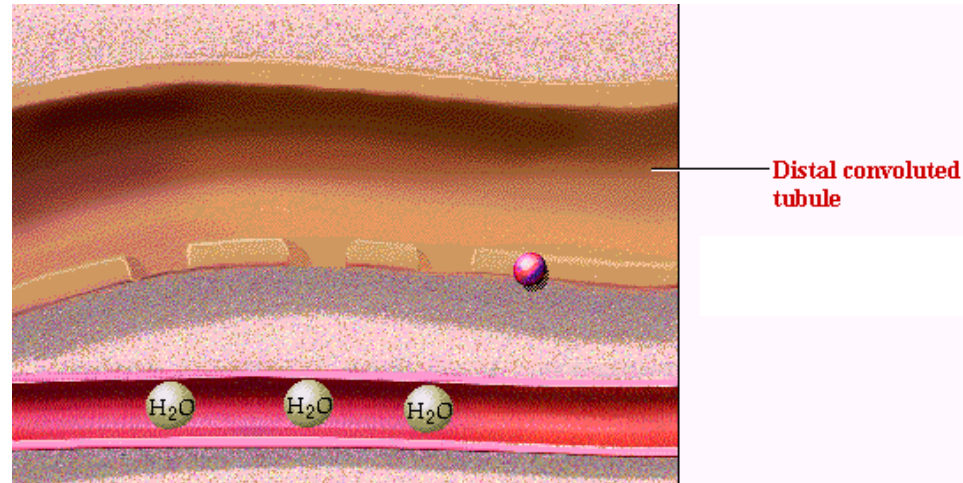
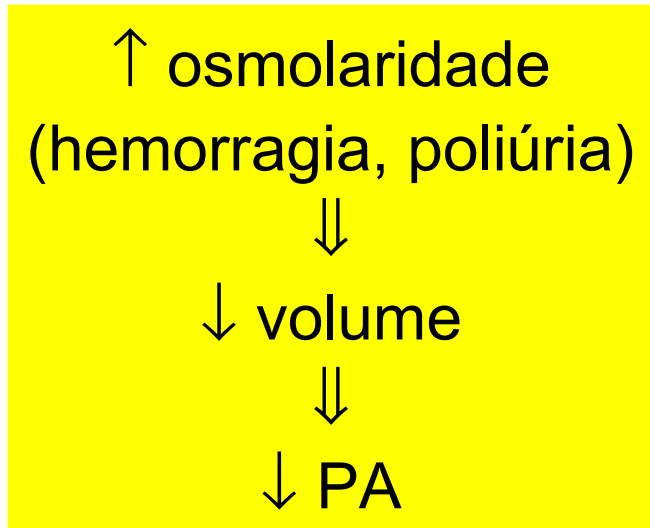
**Resistência ao fluxo**

Diâmetro das  
arteríolas

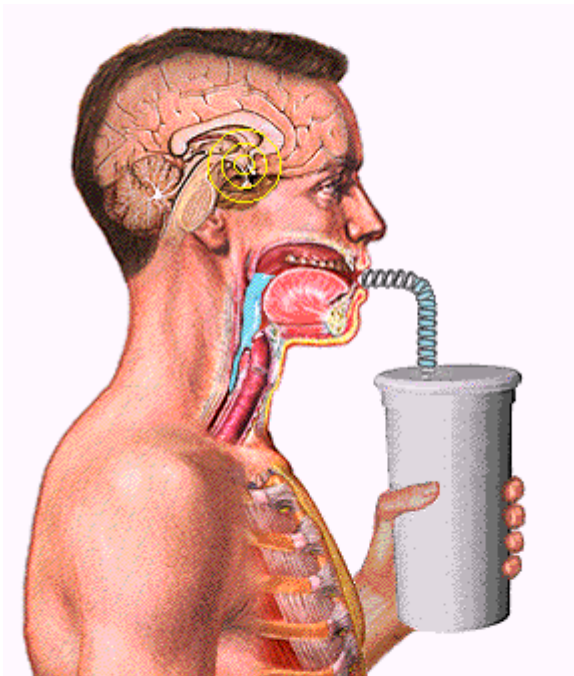
**Distribuição do  
sangue entre  
vasos arteriais  
e venosos**

Diâmetro  
das veias

# EFEITO DA OSMOLARIDADE NA PA



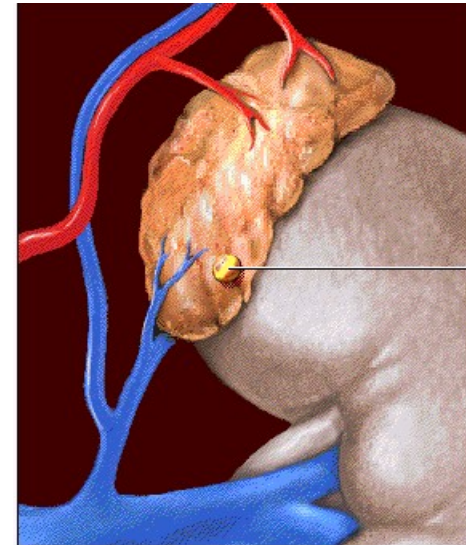
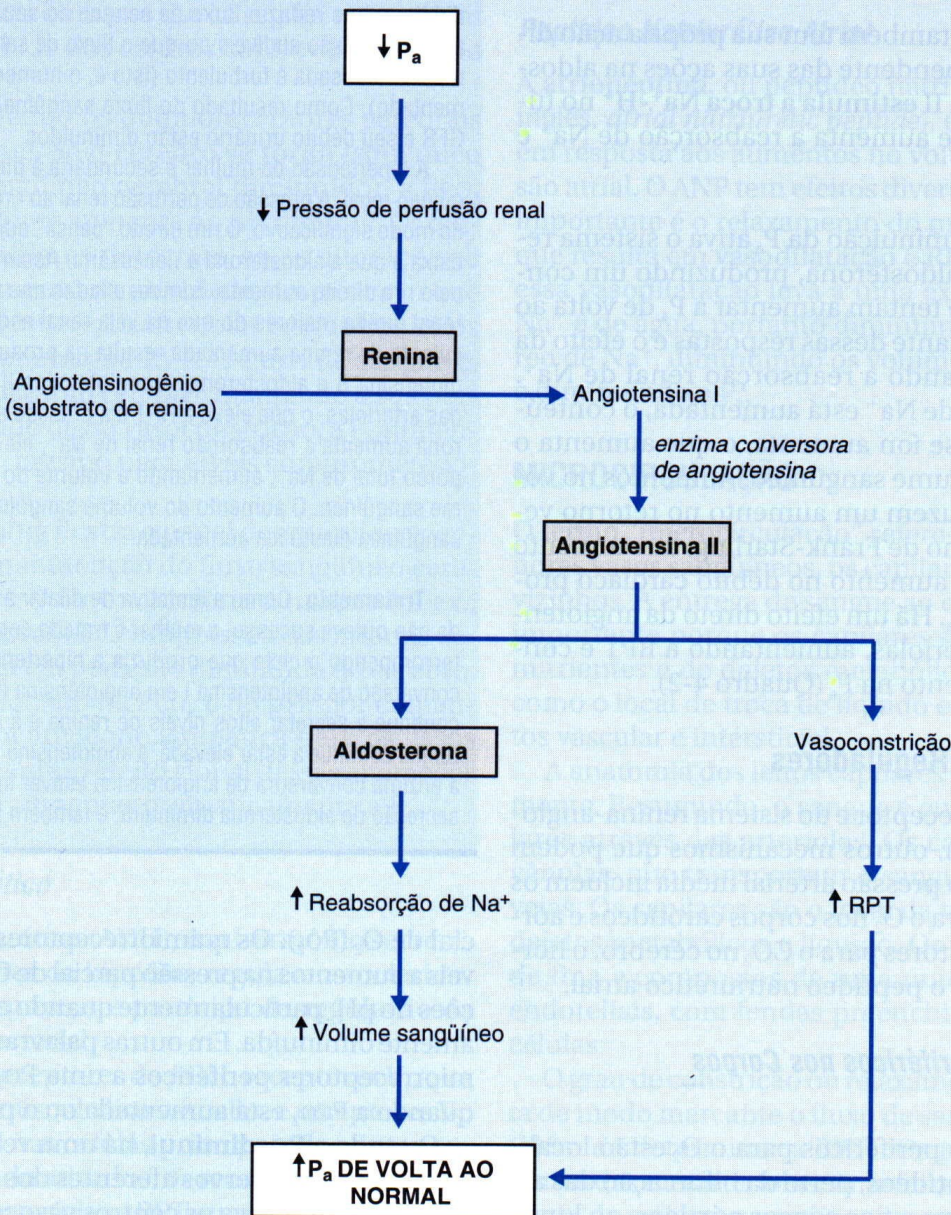
- Efeito a longo prazo: secreção de ADH pelo neuro-hipófise → aumento da reabsorção tubular de água;
- Efeito a curto prazo: estimulação do centro da sede no hipotálamo.



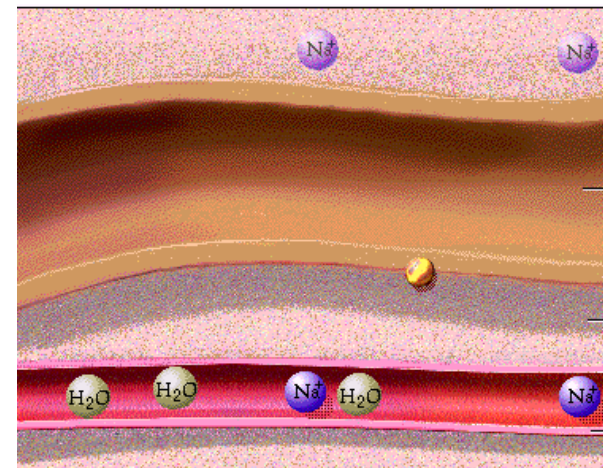


# SISTEMA RENINA – ANGIOTENSINA - ALDOSTERONA

## SISTEMA RENINA-ANGIOTENSINA II-ALDOSTERONA



Aldosterone



Distal convoluted tubule

Interstitial fluid

Peritubular capillary