

SABS I: Vascular Physiology

REGULATION OF MAP

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VI. Regulation of Systemic Arterial Pressure

A. Relationship between arterial pressure and cardiac output

- $MAP = CO \times TPR$
 - The ultimate goal is to maintain blood flow

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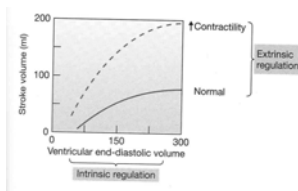
MAP Regulation

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VI. Regulation of Systemic Arterial Pressure

B. Summary of factors which influence cardiac output

- $CO = HR \times SV$
- SV determined by contractility and EDV



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VI. Regulation of Systemic Arterial Pressure

B. Summary of factors which influence cardiac output

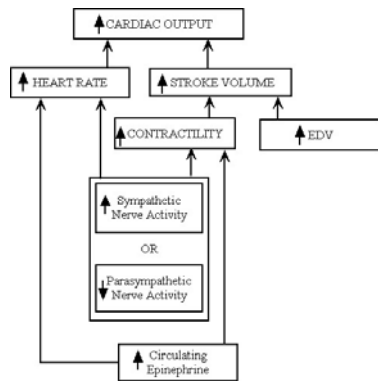
- Heart Rate and Contractility influenced by:
 - Sympathetic nervous system (+)
 - Parasympathetic nervous system (-)
 - Circulating epinephrine (+)

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Factors Influencing Cardiac Output



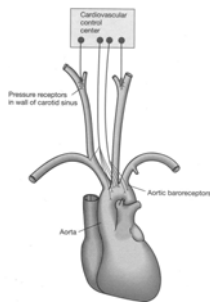
test

Overview

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VI. Regulation of Systemic Arterial Pressure

C. Example of neural control via baroreceptors



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VI. Regulation of Systemic Arterial Pressure

Pressoreceptor response to elevated blood pressure

- **↑pressure** → ↑ Baroreceptor activity
- ↑ Baroreceptor activity → ↑ PSNA, ↓SNA

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VI. Regulation of Systemic Arterial Pressure

Pressoreceptor response to elevated blood pressure

- **↑pressure** → ↑ Baroreceptor activity
- ↑ Baroreceptor activity → ↑ PSNA, ↓SNA
- ↑ PSNA, ↓SNA → ↓heart rate, ↓contractility → ↓CO

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VI. Regulation of Systemic Arterial Pressure

Pressoreceptor response to elevated blood pressure

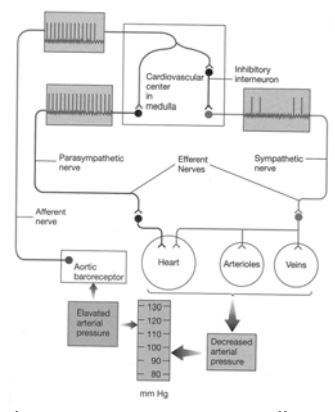
- **↑pressure** → ↑ Baroreceptor activity
- ↑ Baroreceptor activity → ↑ PSNA, ↓SNA
- ↑ PSNA, ↓SNA → ↓heart rate, ↓contractility → ↓CO
- ↓SNA → dilation of arterioles and venules
 - Arteriolar dilation → ↓TPR
 - Venodilation → ↑Vv, ↓EDV → ↓SV → ↓CO
- ↓CO X ↓TRP → **↓pressure** (MAP = CO X TPR)

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Responses to Blood Pressure Changes



test Overview 10

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As tissue needs change, how are transportation and exchange altered?

What determines the flow of blood through the vasculature?
