

SIGA
FSIA



Schweizerische Interessengemeinschaft für Anästhesiepflege
Fédération suisse des infirmières et infirmiers anesthésistes
Federazione svizzera infermiere e infermieri anestesisti

Anästhesiekongress 2016; Luzern, 16.04.2016



Spuren des Lebens Wie das Herz schlägt

Kantonsspital
St.Gallen

Anästhesiologie & Intensivmedizin



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Aufgaben des Kreislaufs

Hauptaufgabe
des Kreislaufs?

➡ O₂-Versorgung ◀

Aufgaben des Kreislaufs - O₂-Angebot

→ O₂-Versorgung ←

Hauptdeterminanten des O₂-Angebotes:

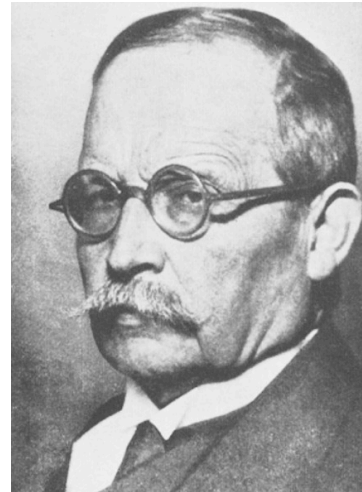
- 1. Hämoglobingehalt (Hb)
 - 2. Sauerstoffsättigung (SO₂)
 - 3. Herzminutenvolumen (HMV) = SV × Hf
- } O₂-Gehalt

$$[(\text{Hb} \times \text{SO}_2 \times 1.36) + (\text{pO}_2 \times 0.023)] \times \text{HMV}$$

Grundzüge der Hämodynamik

Pumpleistung \sim $\left\{ \begin{array}{l} \text{Vorlast (Preload)} \\ \text{Nachlast (Afterload)} \\ \text{Kontraktilität} \end{array} \right.$

Preload: Frank-Starling

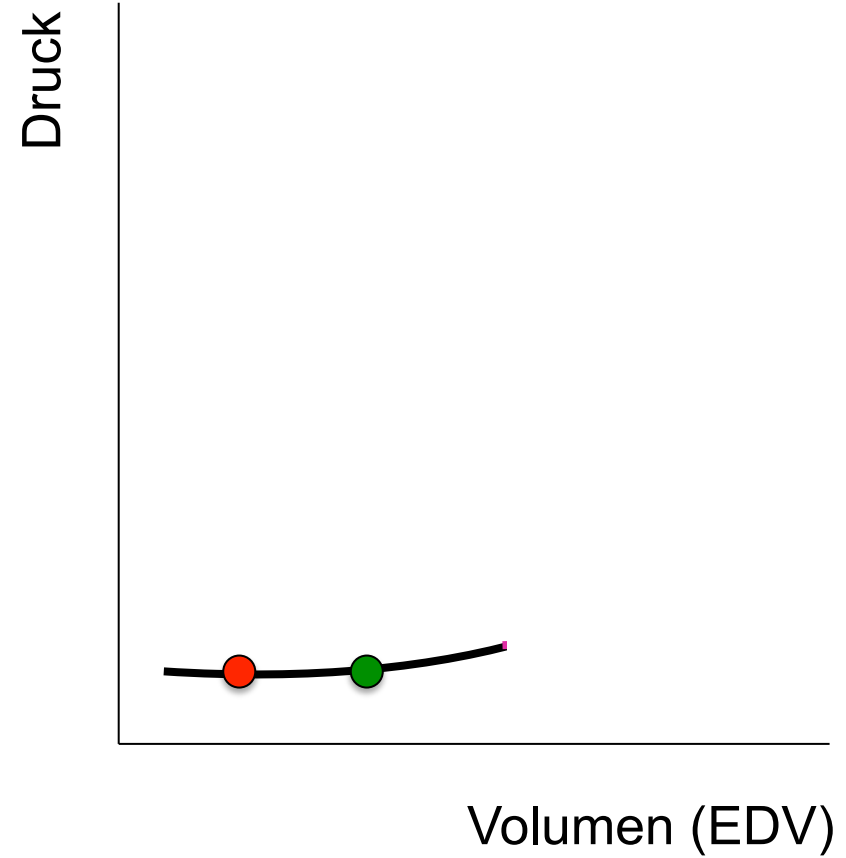
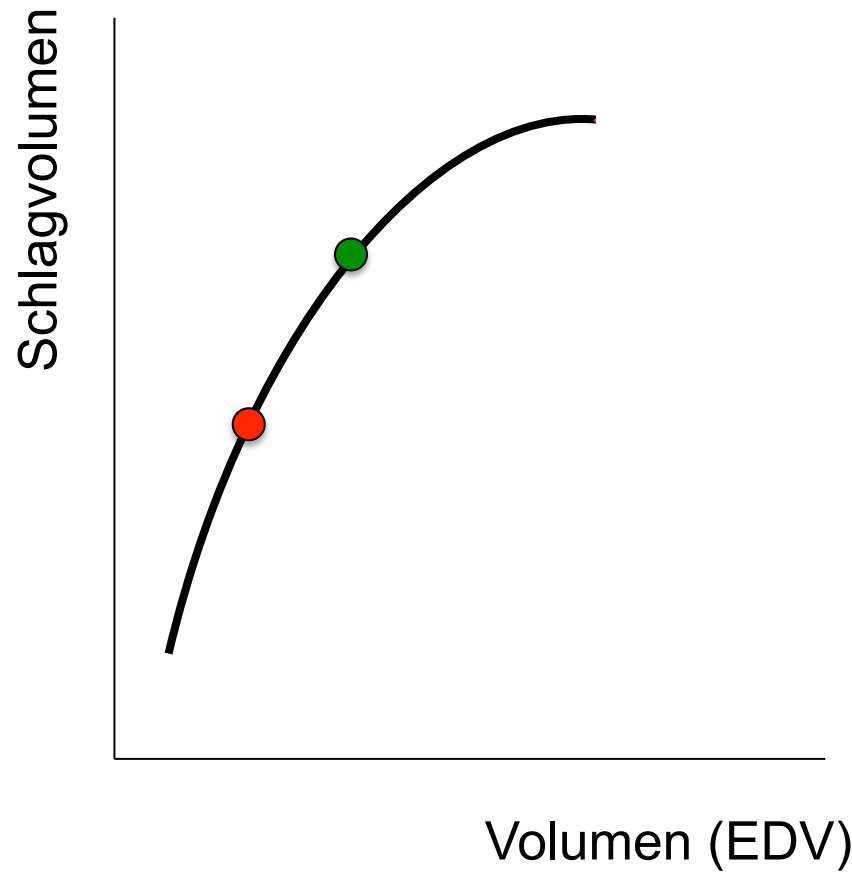


Otto Frank
(1865 - 1944)

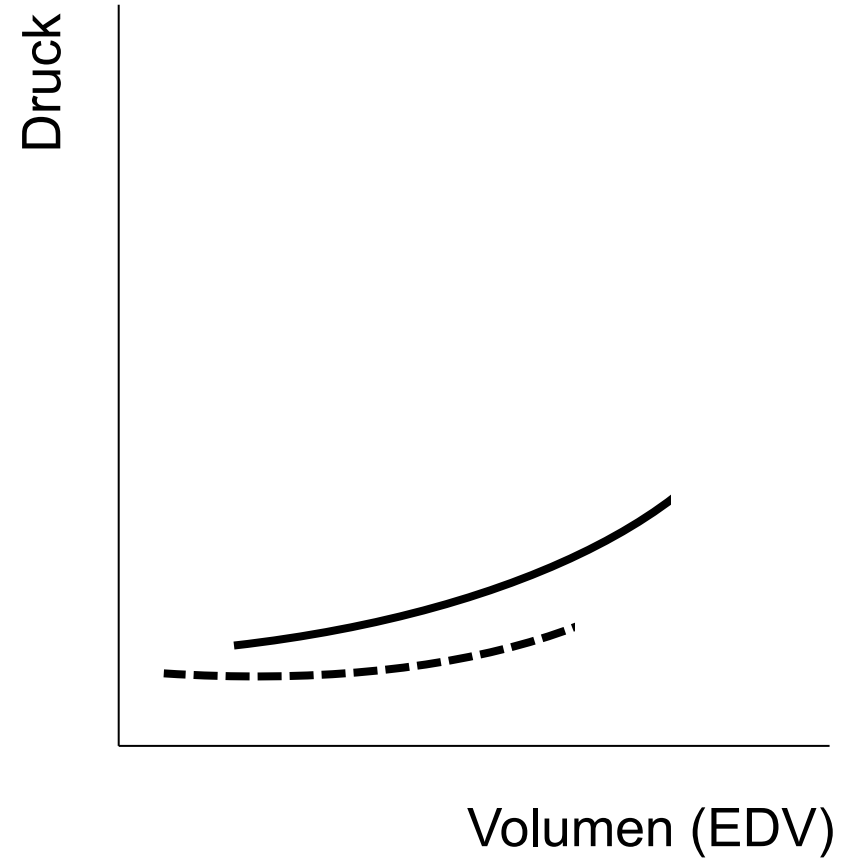
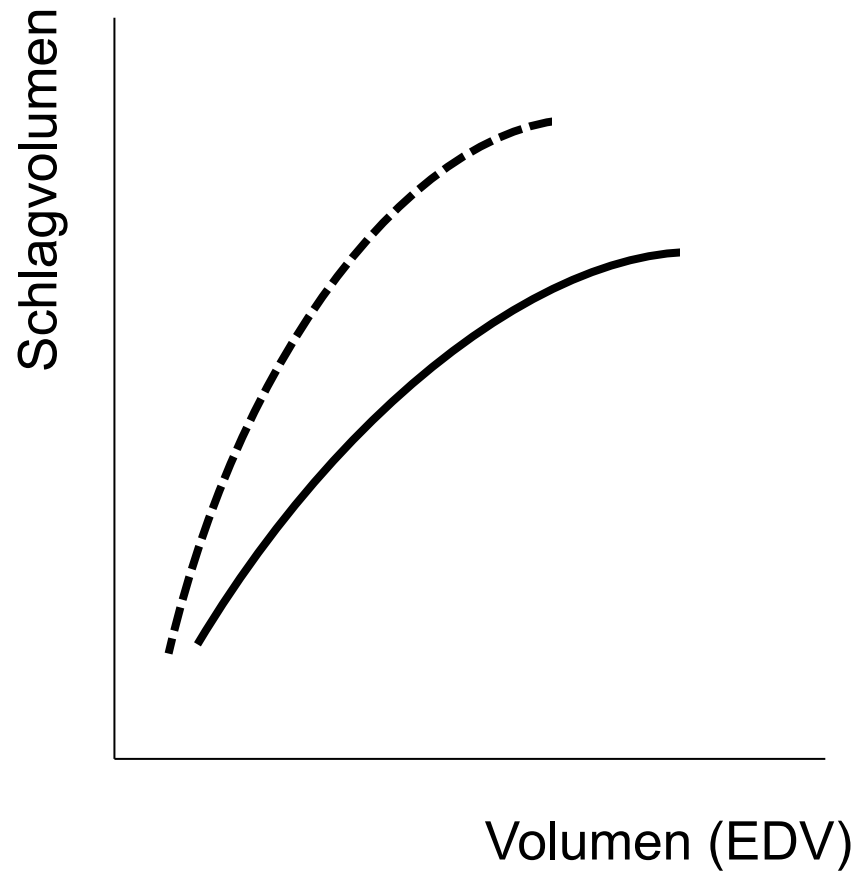


Ernest Henry Starling
(1866 - 1927)

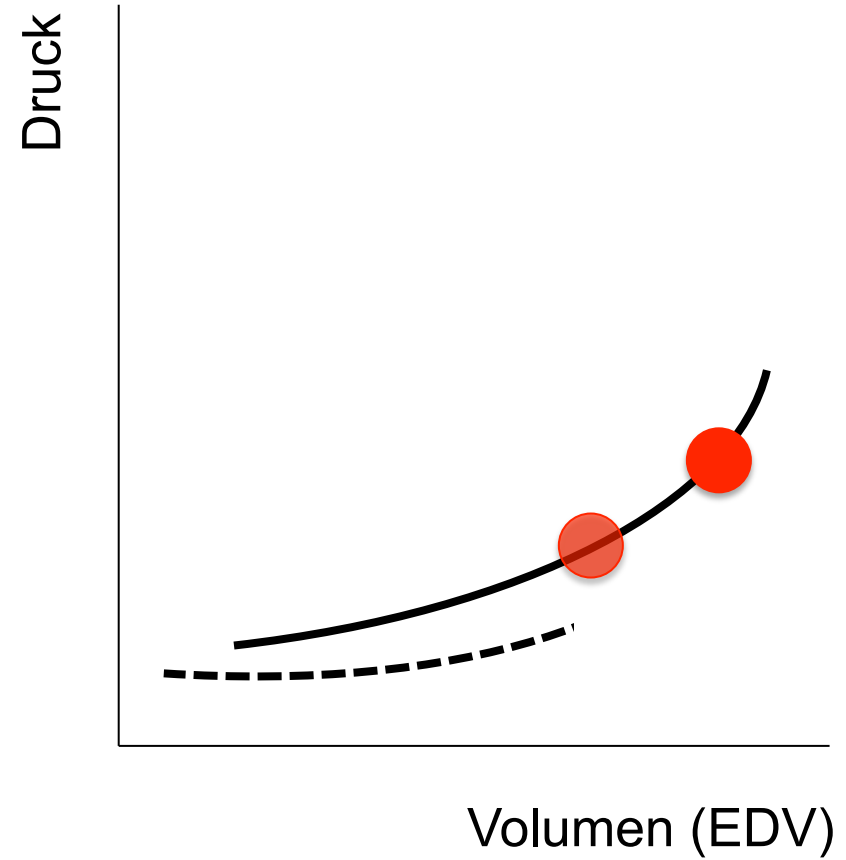
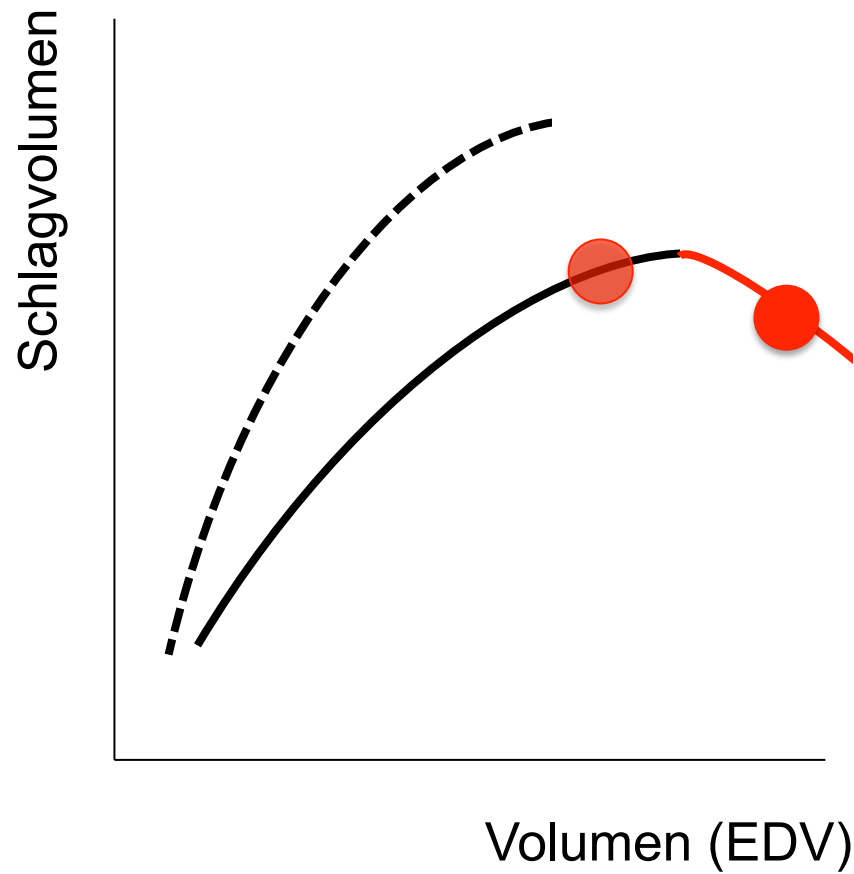
Preload: Volume responsiveness



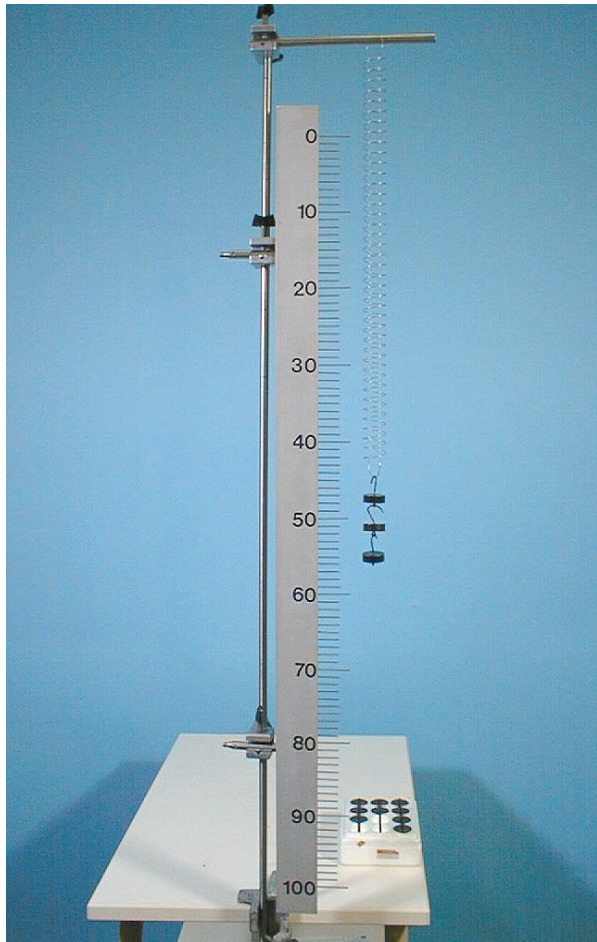
Volumenstatus



Volumenstatus

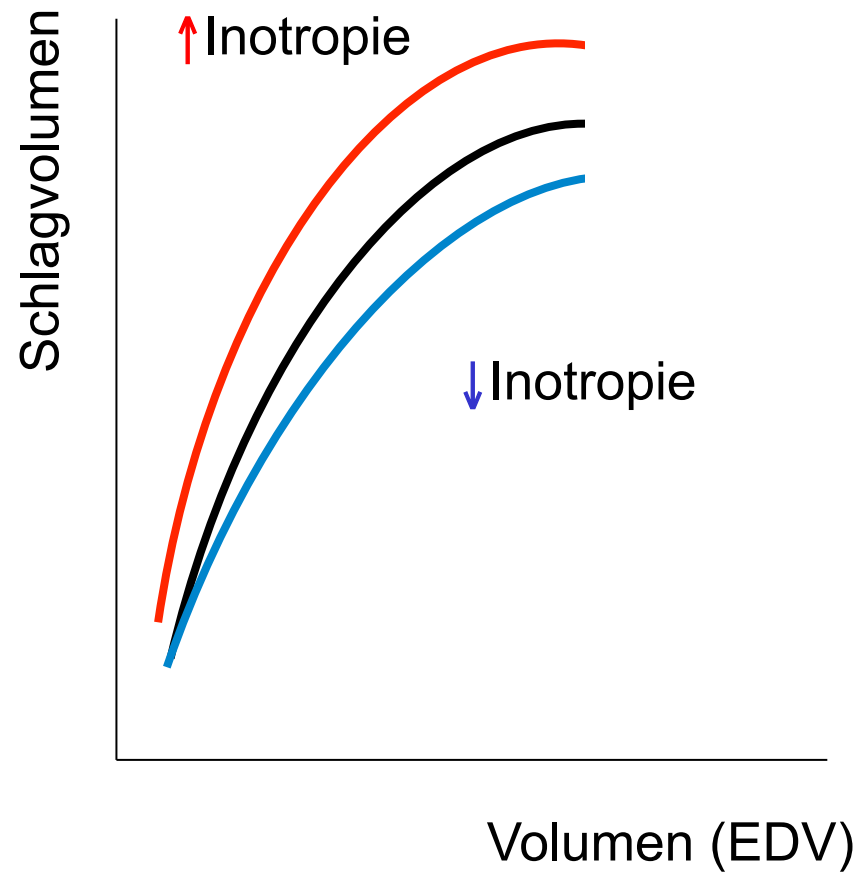


Grundzüge der Hämodynamik

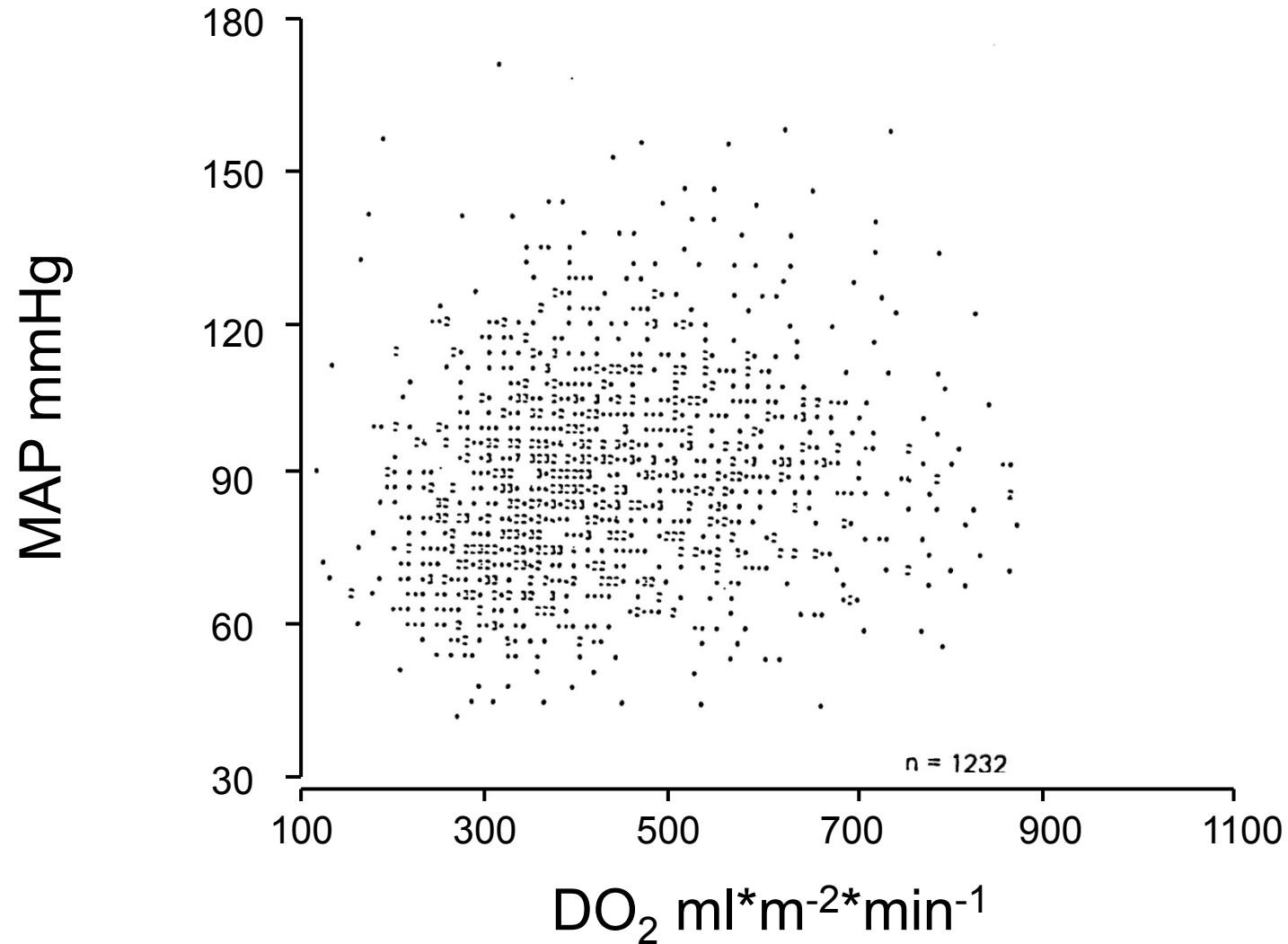


~ {
Vorlast (Preload)
Nachlast (Afterload)
Kontraktilität

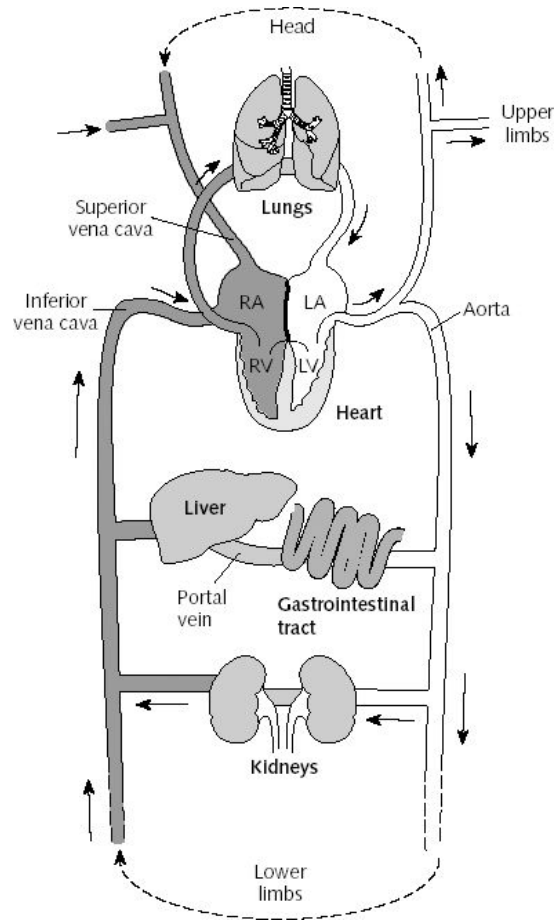
Frank-Starling Beziehung



Zusammenhang O₂ Angebot ~ MAP

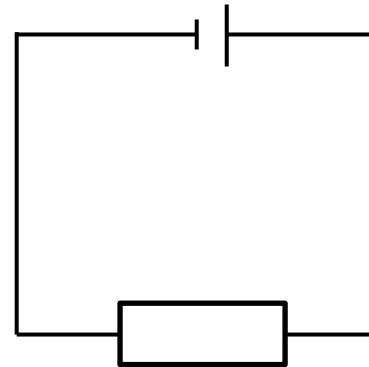


Grundlagen der Hämodynamik

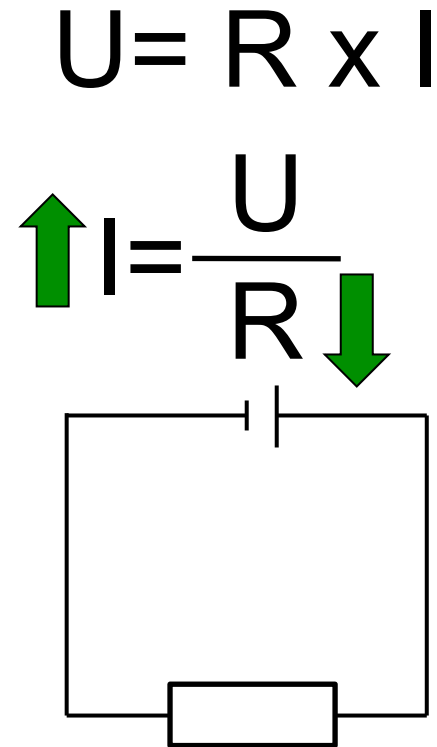
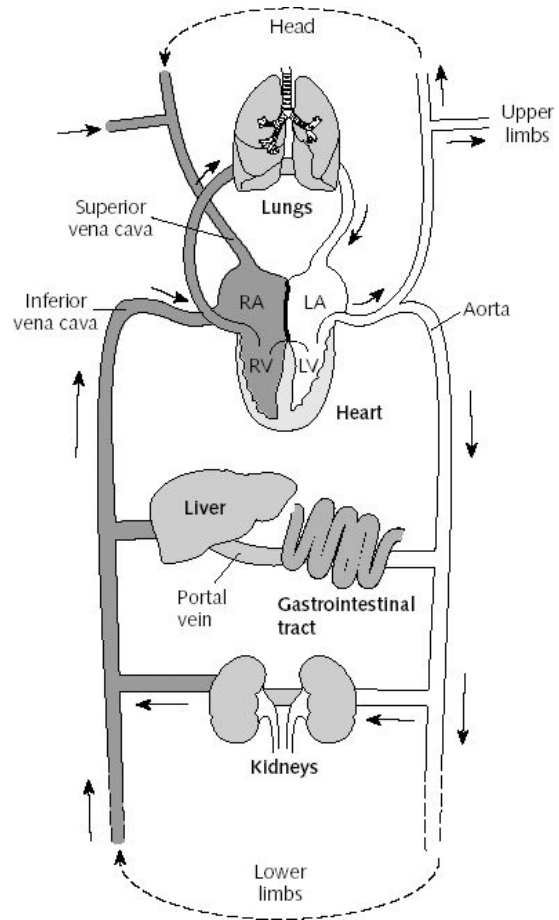


$$U = R \times I$$

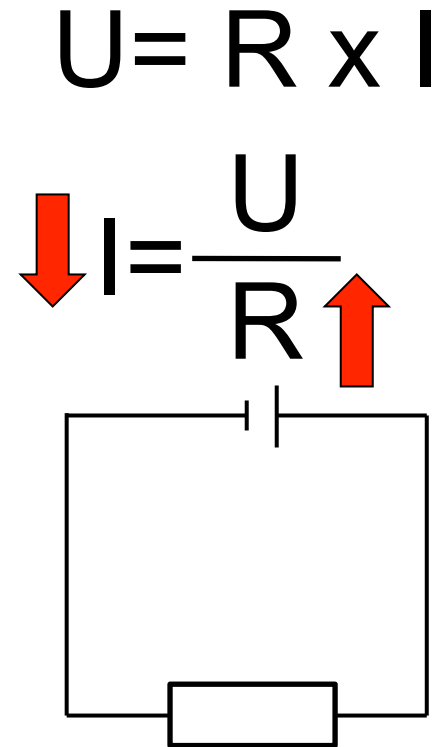
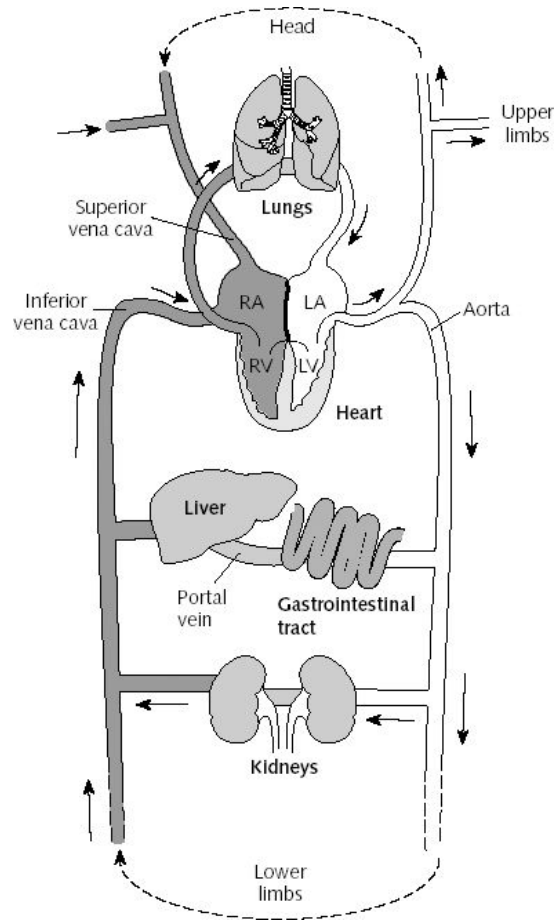
$$I = \frac{U}{R}$$



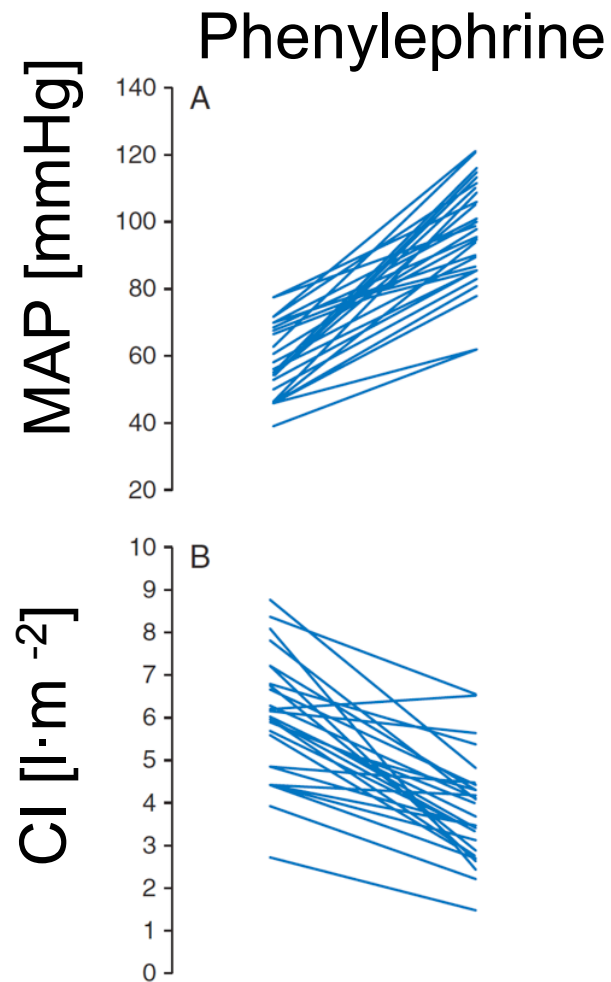
Grundlagen der Hämodynamik



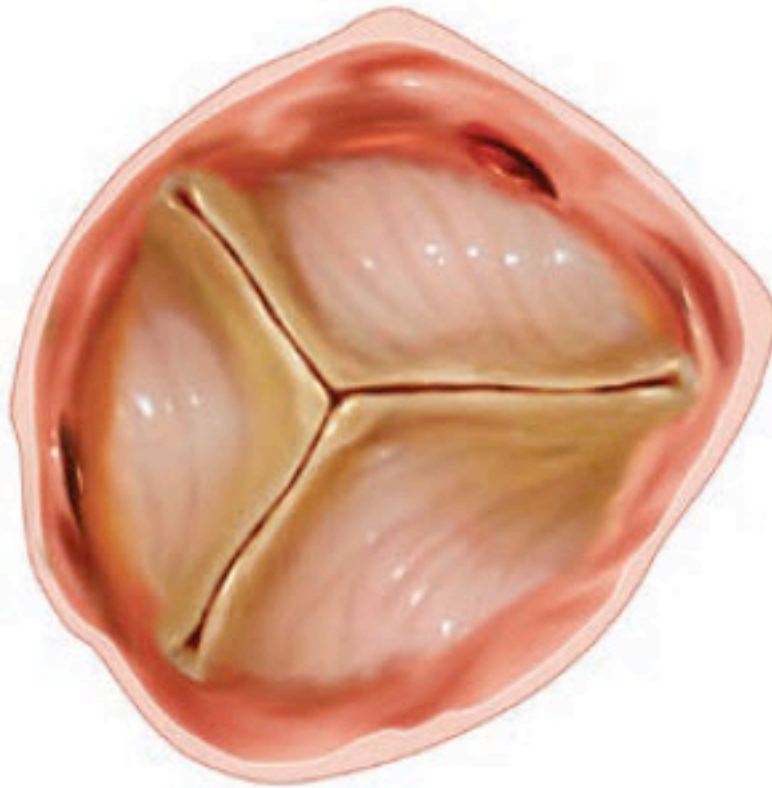
Grundlagen der Hämodynamik



Grundzüge der Hämodynamik



Aortenstenose

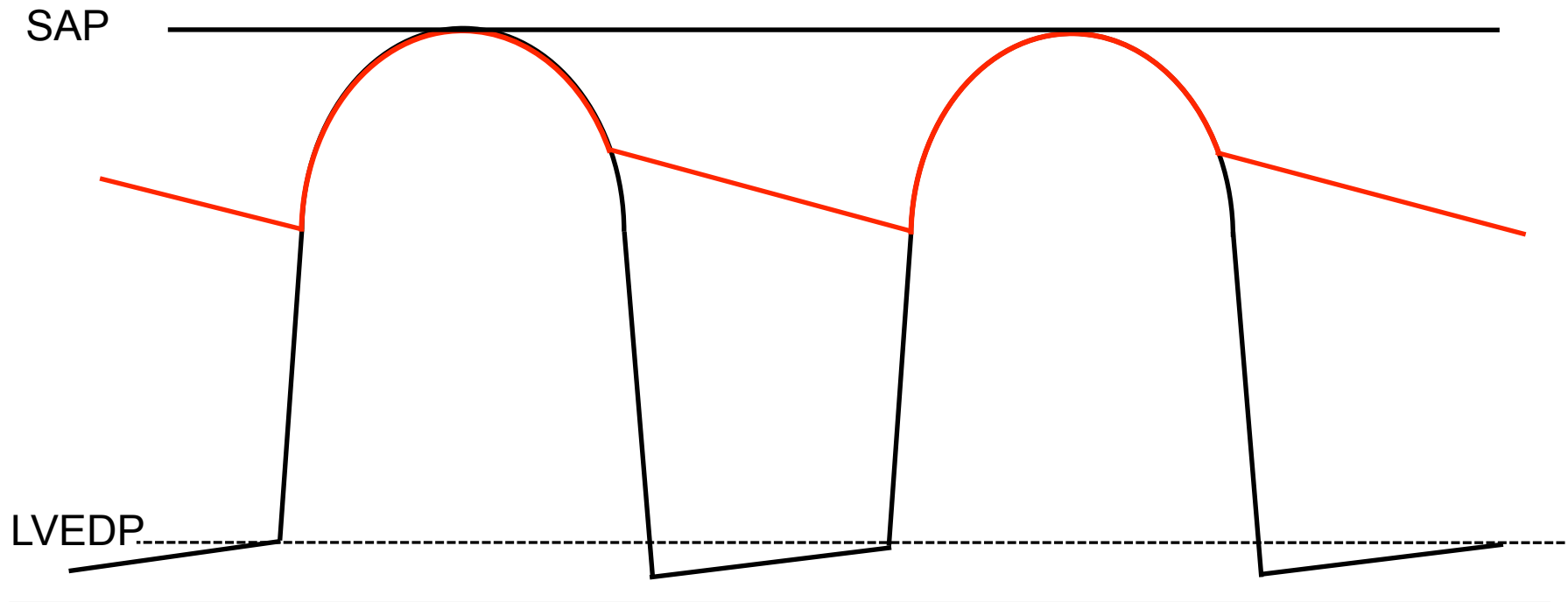


Normal Valve

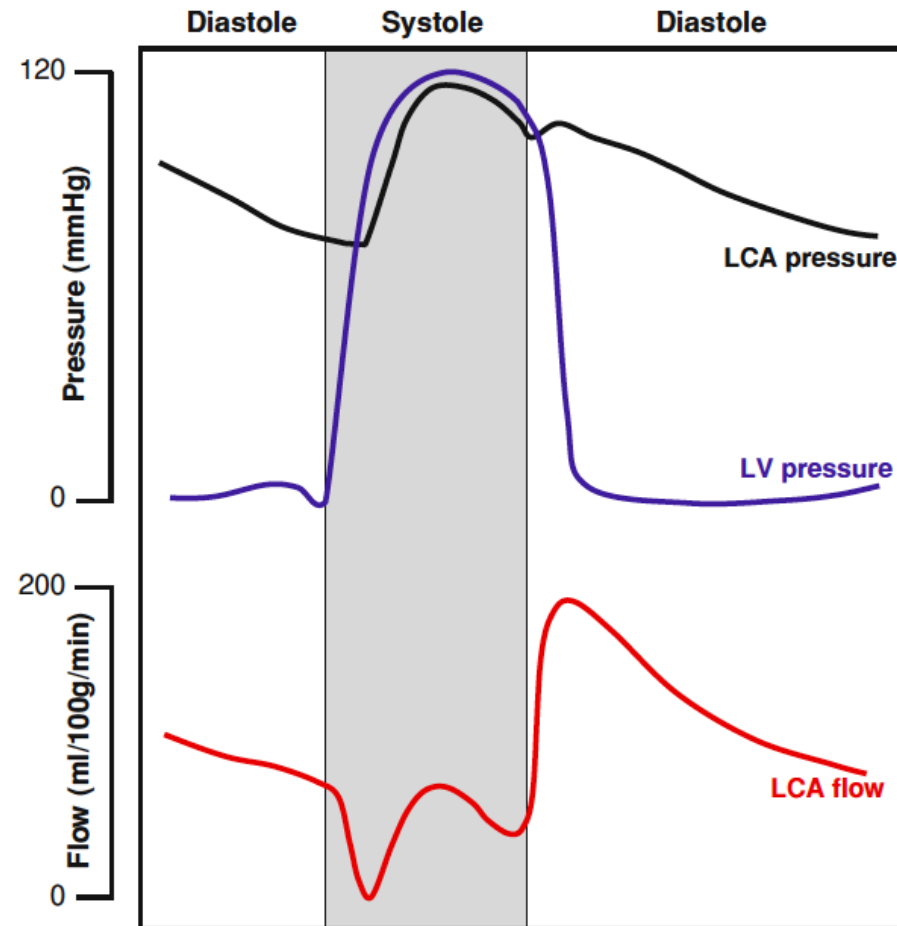


Stenotic Valve

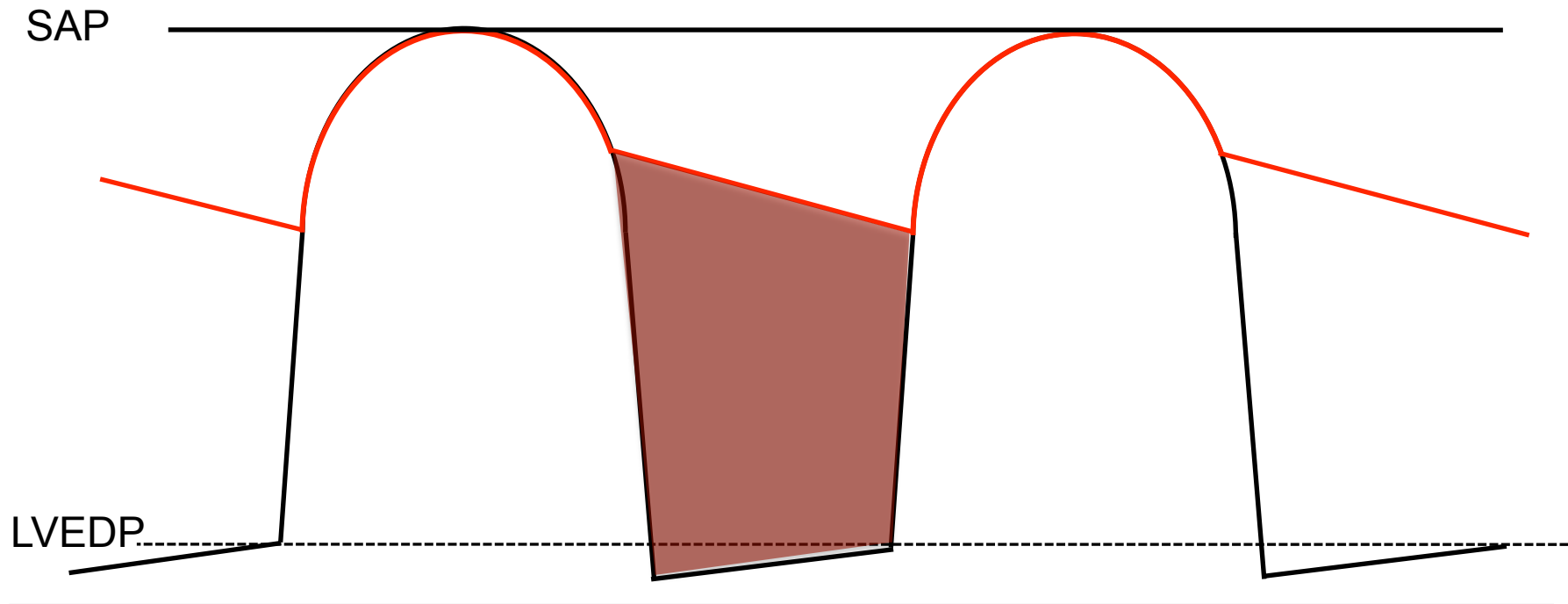
Normale Hämodynamik



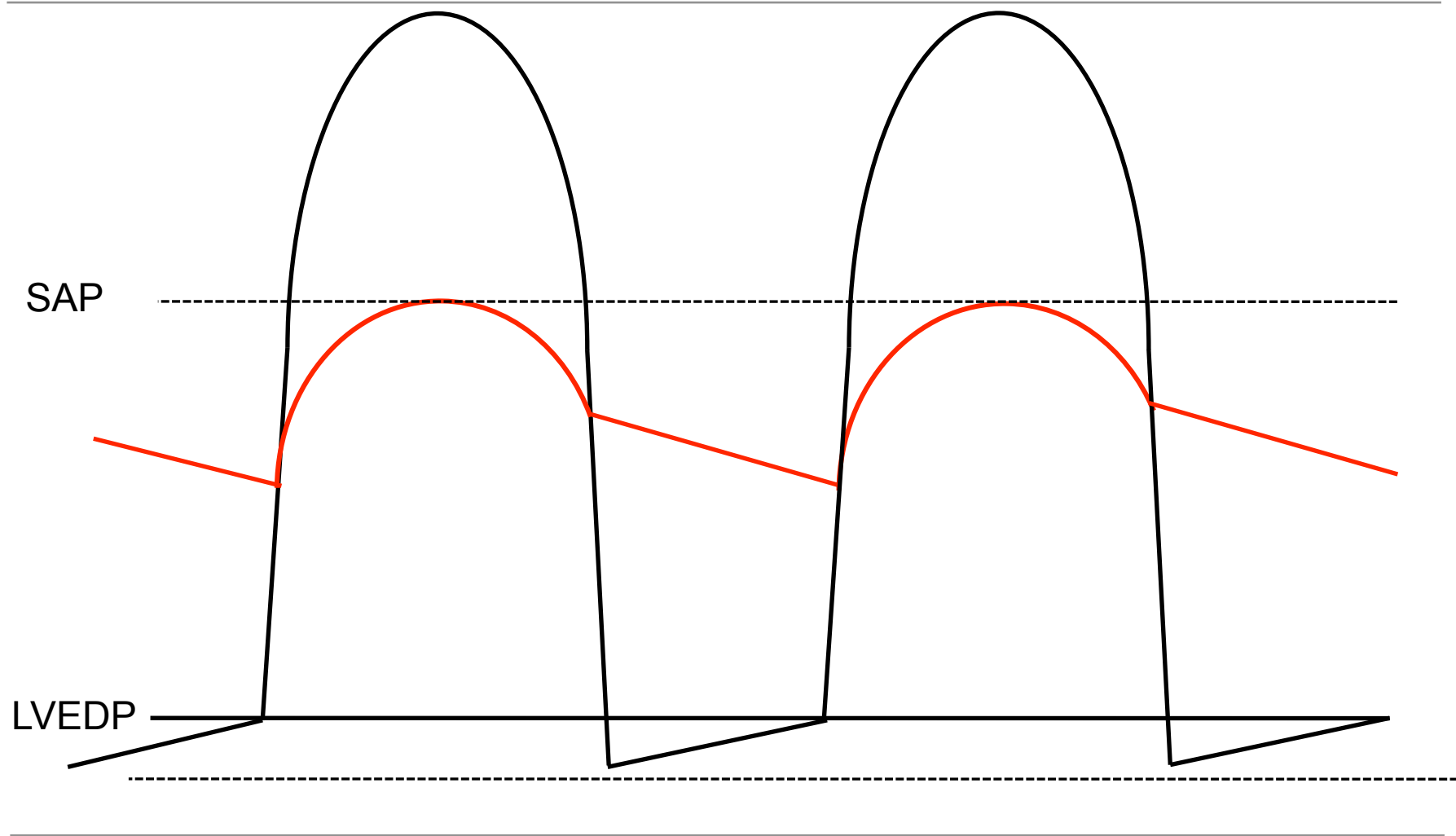
Normale Koronardurchblutung



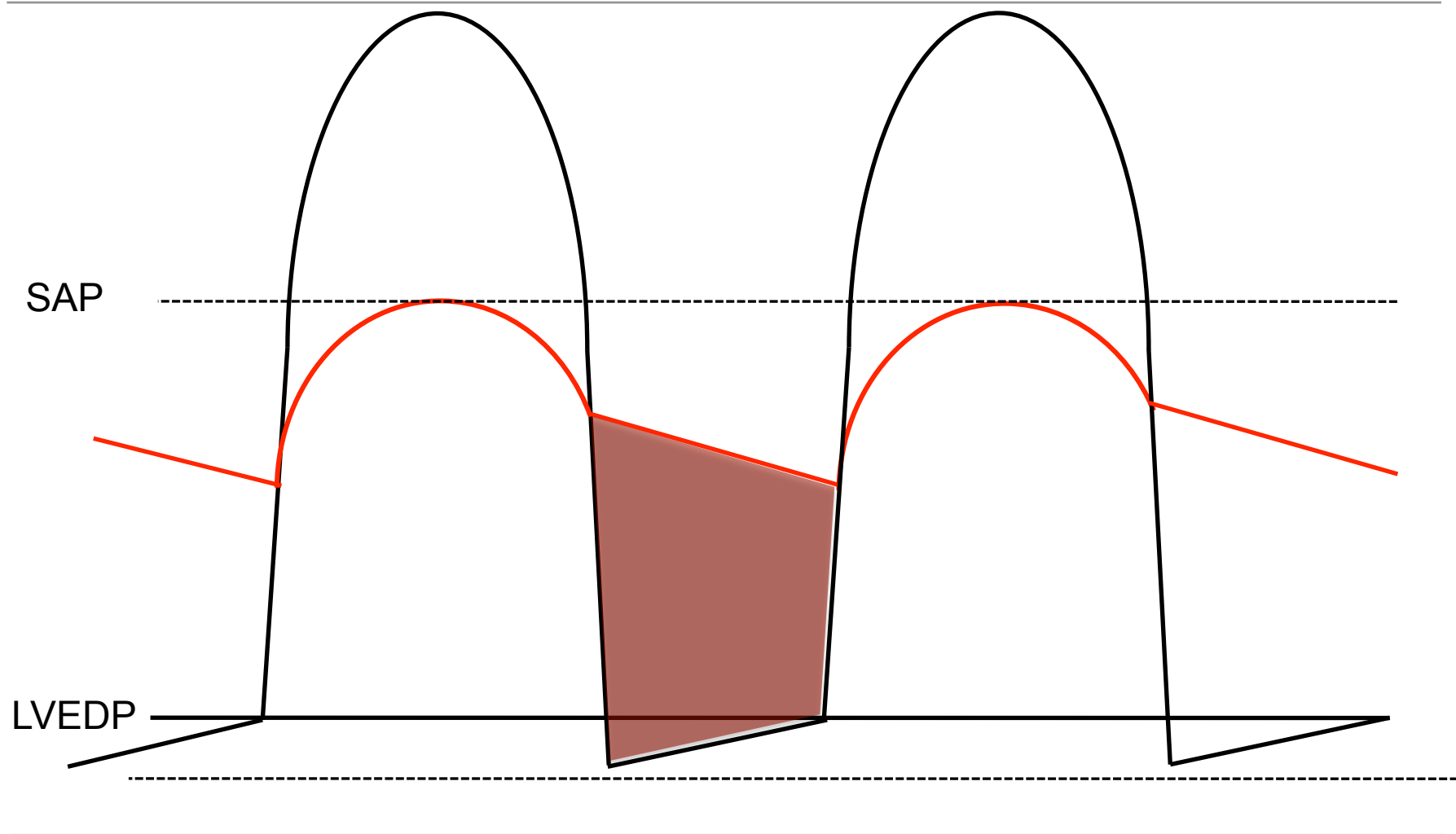
Normale Hämodynamik



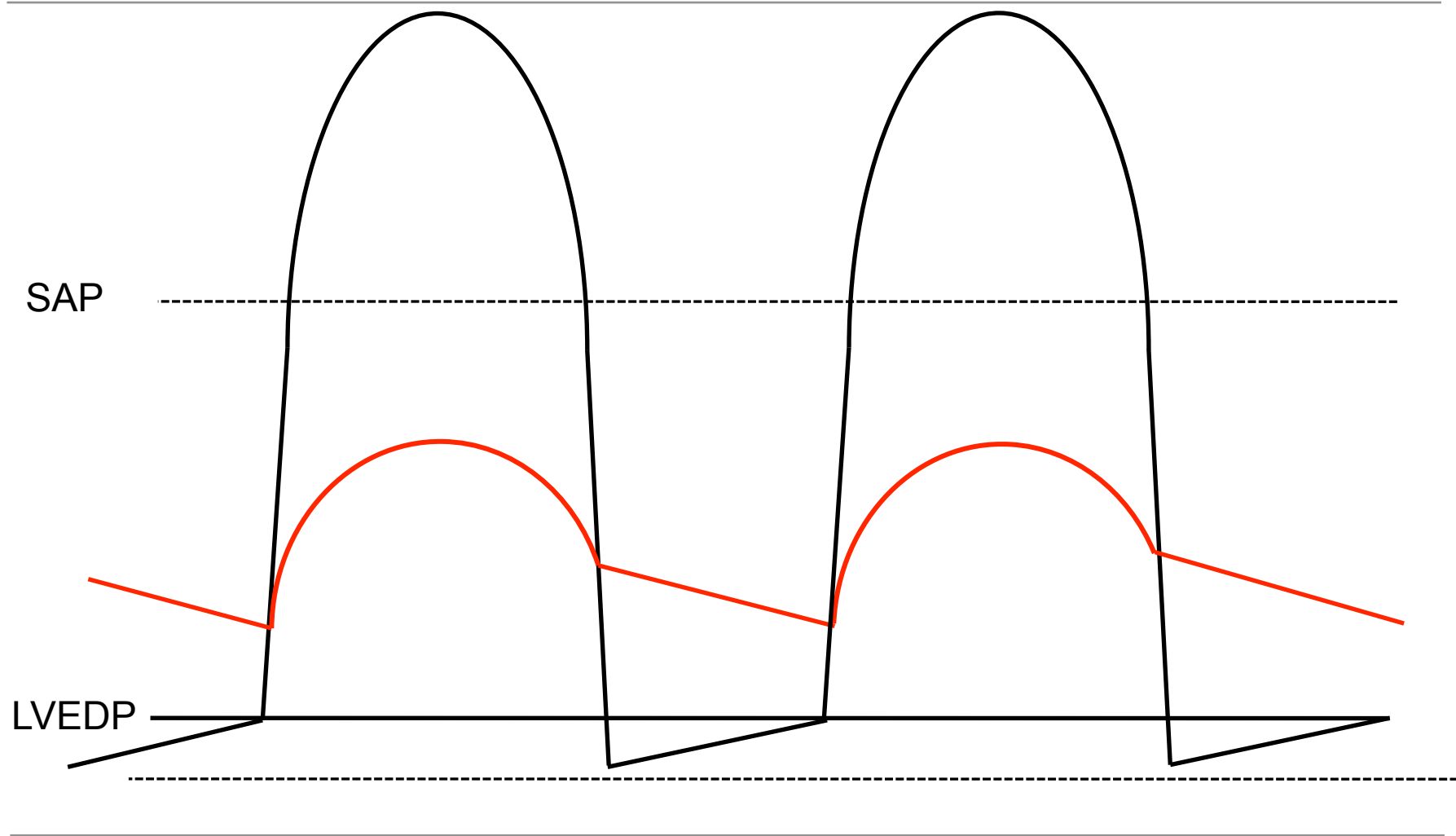
Aortenstenose



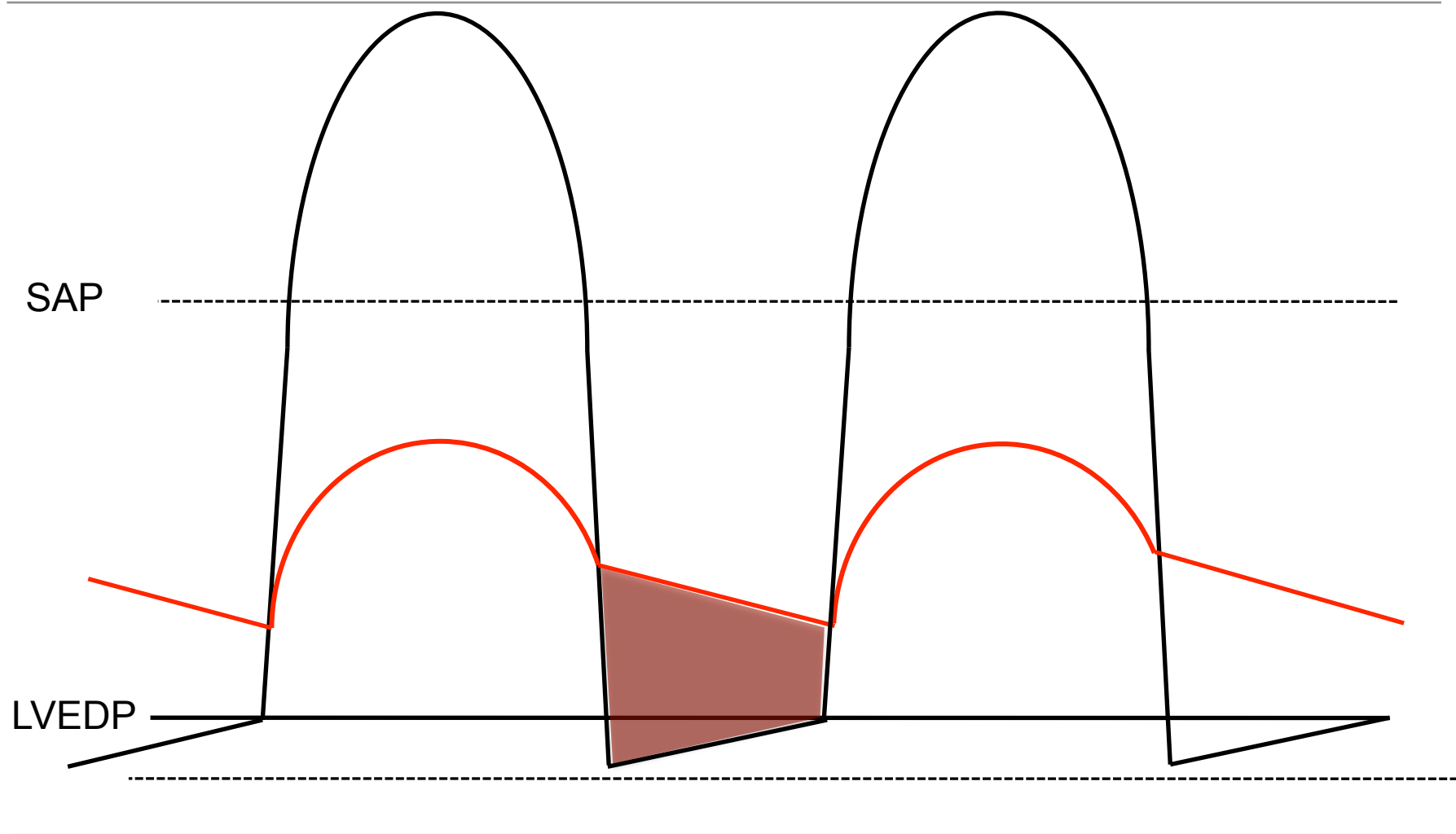
Aortenstenose



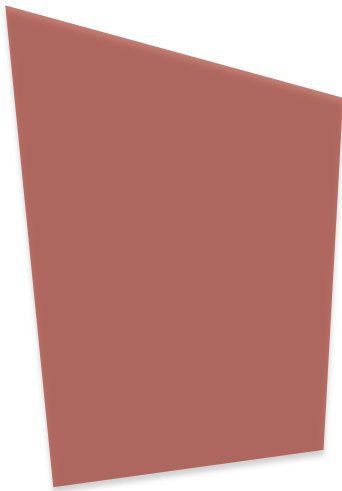
Aortenstenose



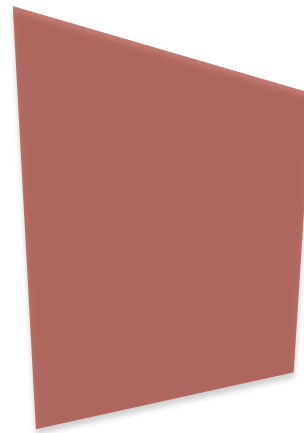
Aortenstenose



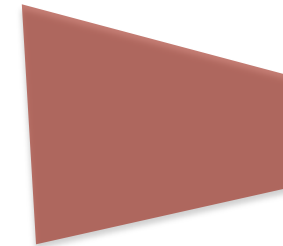
Perfusion des linken Ventrikels



Normale Hämodynamik



Aortenstenose
Normotensiv



Aortenstenose
Hypotensiv

Diagnose? Aortenstenose

Welche hämodynamischen Prinzipien sind einzuhalten?

Sinusrhythmus bewahren!

Tachykardie meiden!

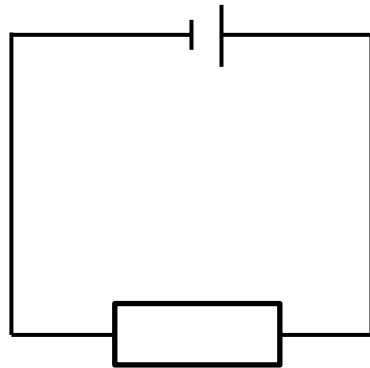
Myokard. Perfusionsdruck erhalten

CAVE Volämie!

Grundzüge der Hämodynamik

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Kontraktilität