

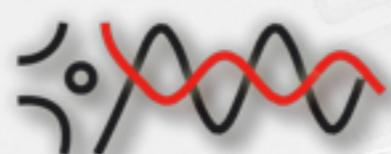
Physiologie

UE5

Motorik

Fred Wouters

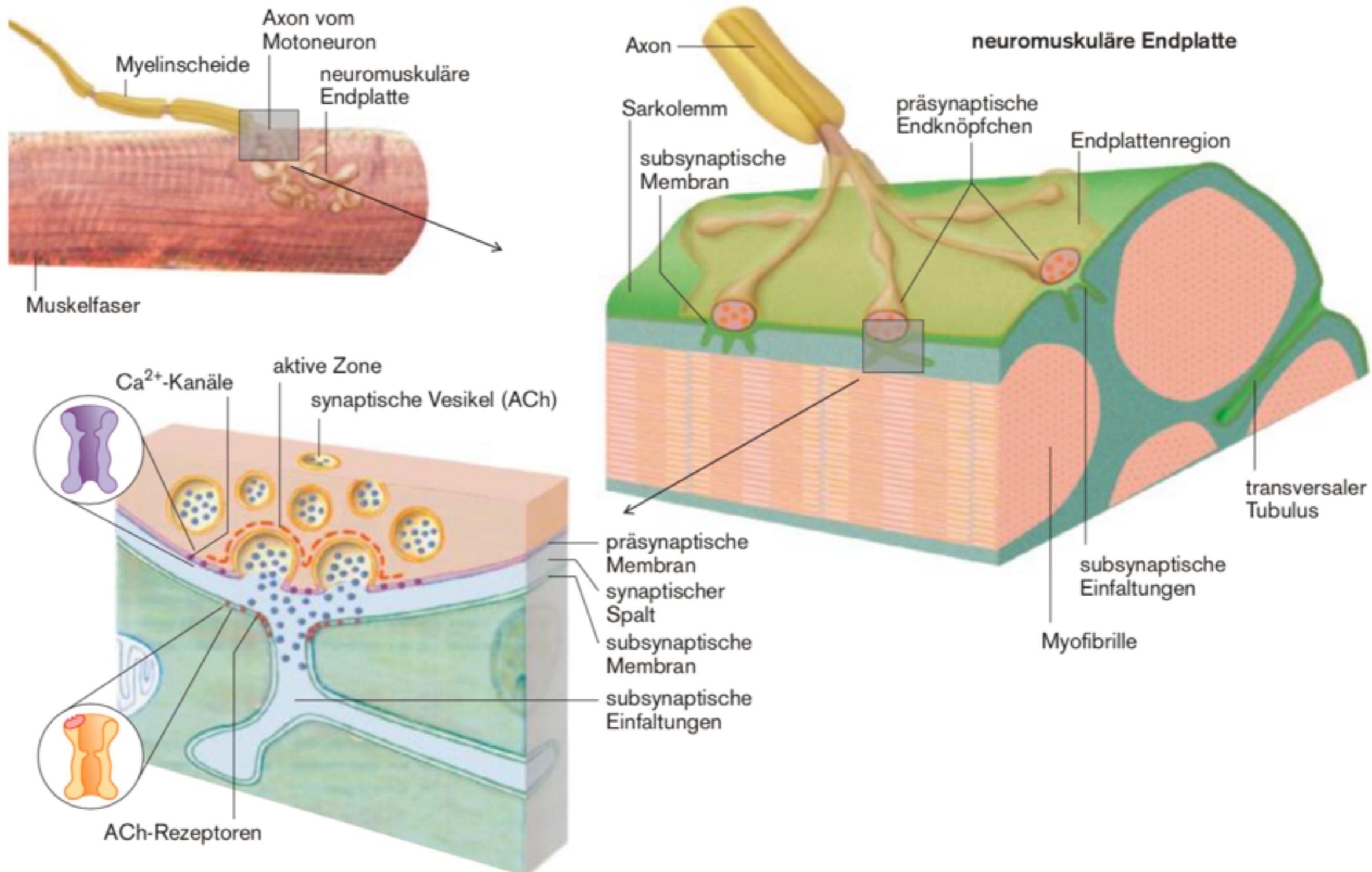
Molekulare & Zelluläre Systeme
Institut für Neuropathology
E-mail: fred.wouters@gwdg.de



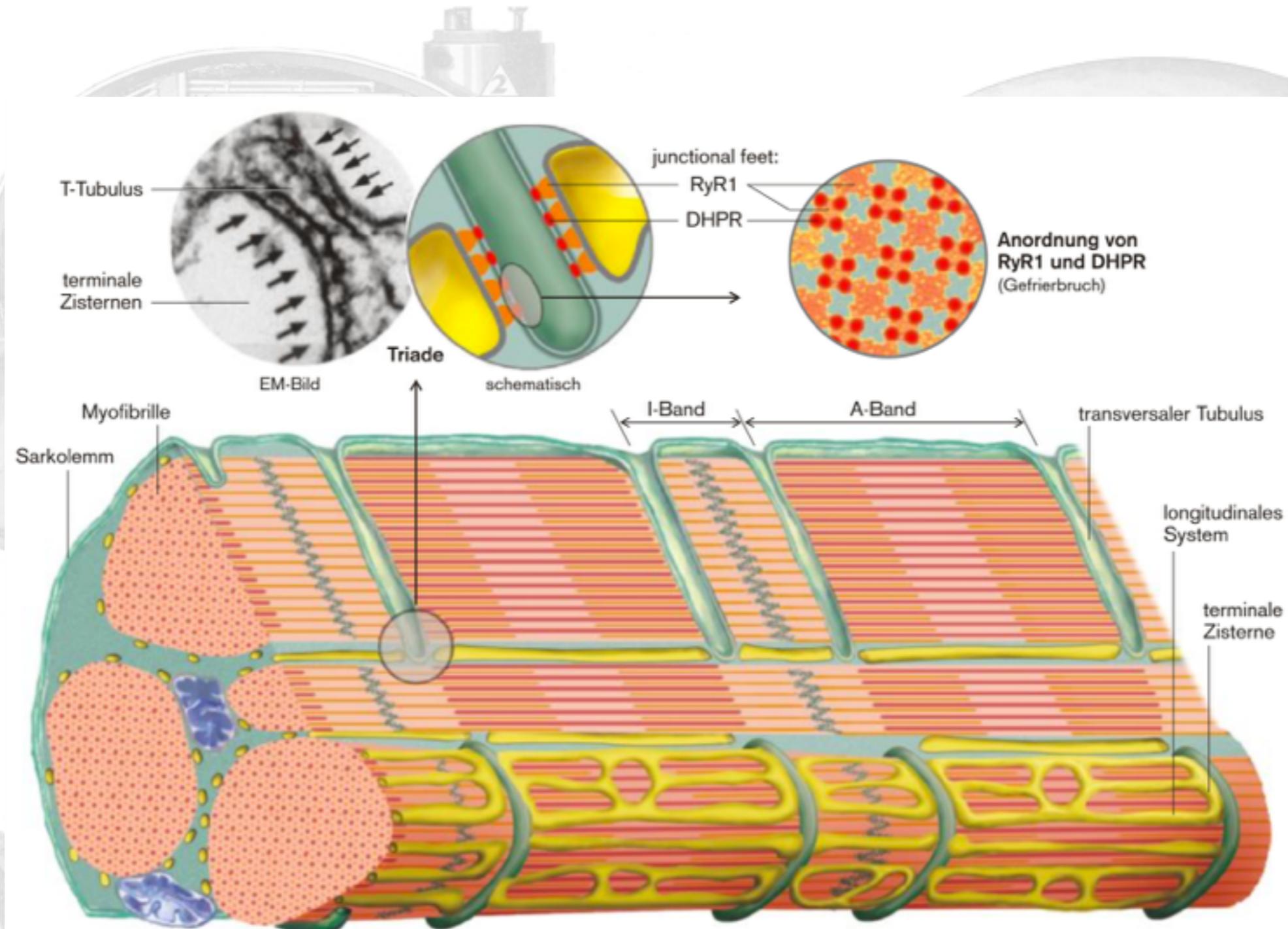
UNIVERSITÄTSMEDIZIN
GÖTTINGEN

UMG

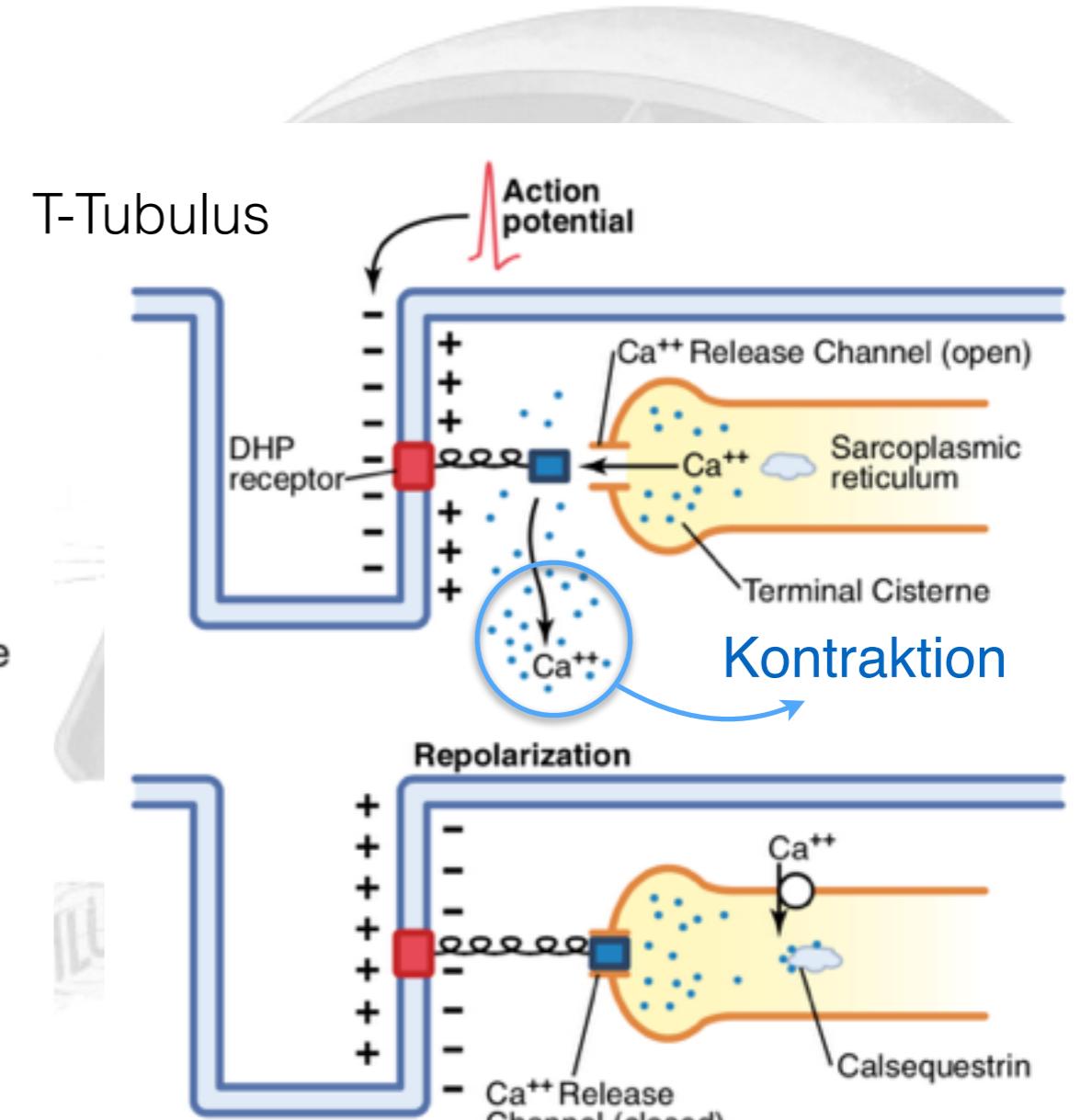
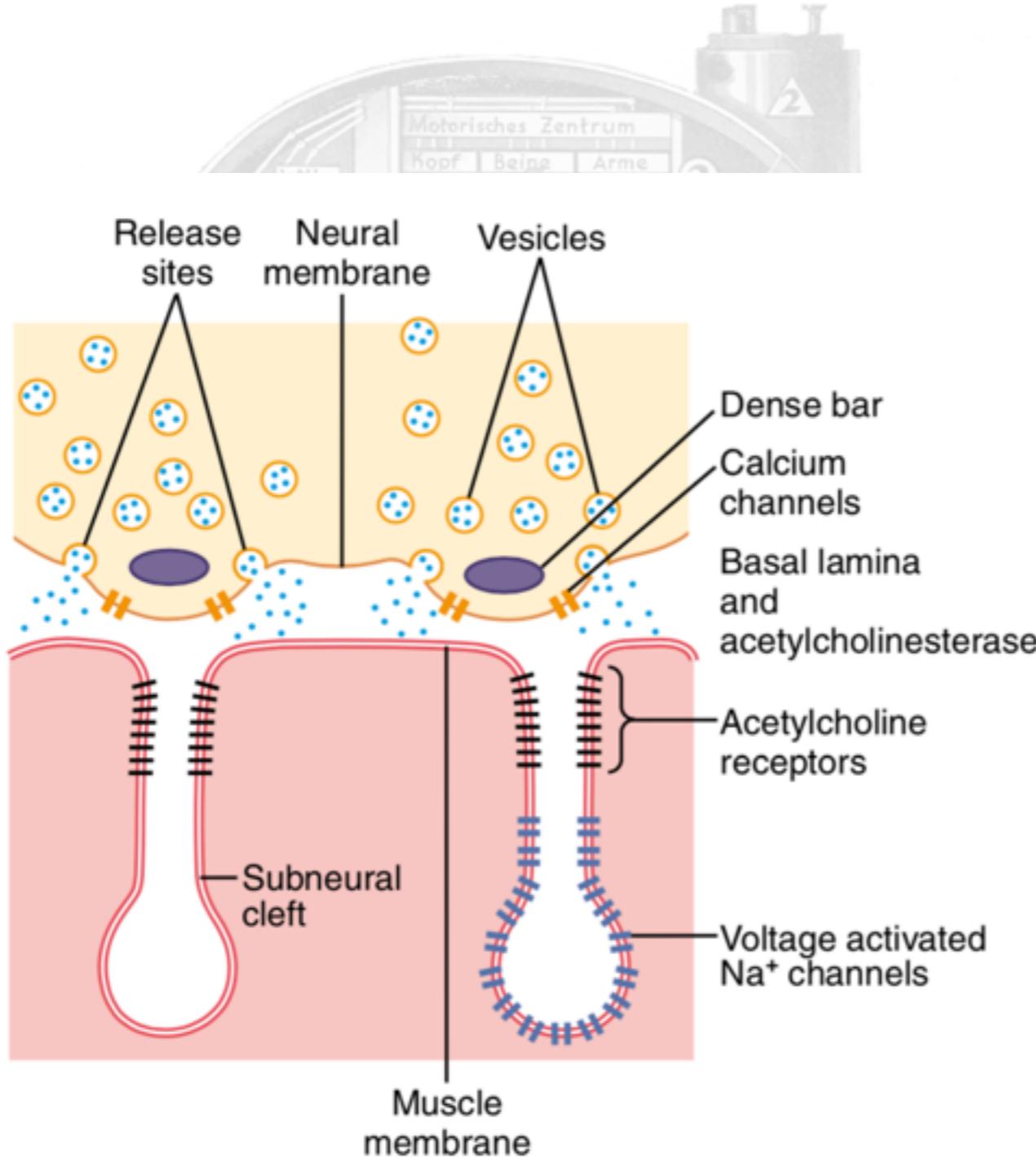
Neuromuskuläre Endplatte



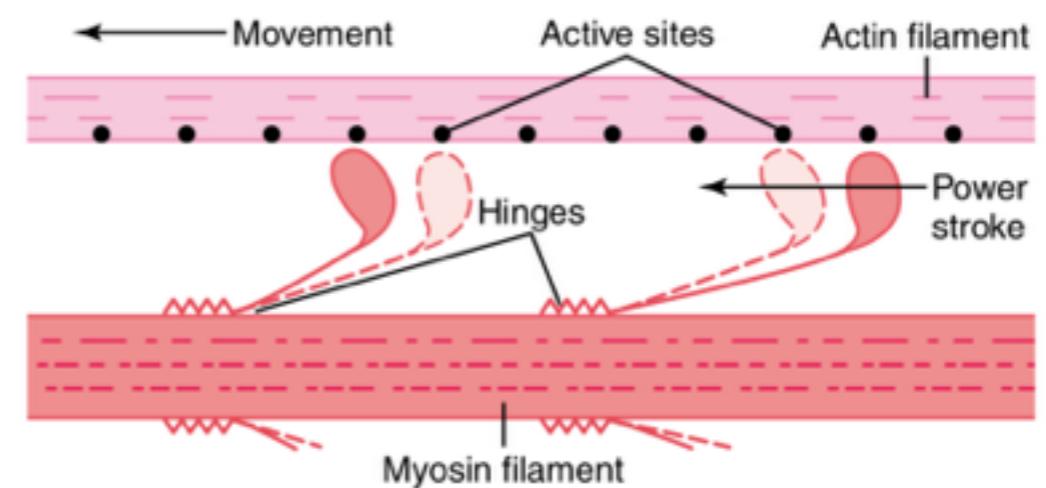
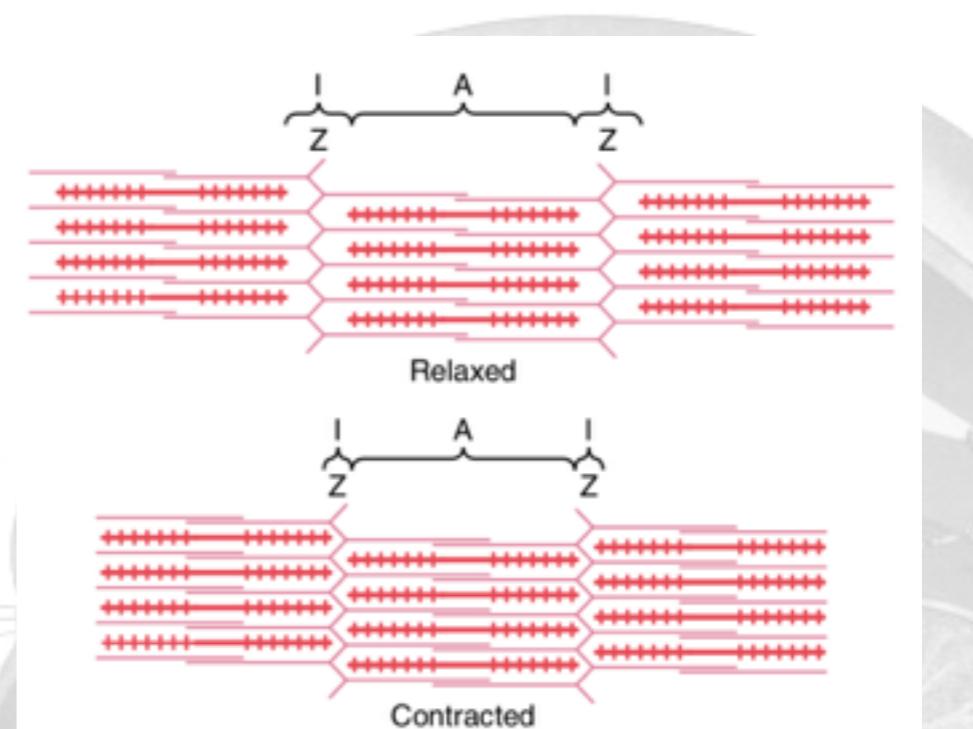
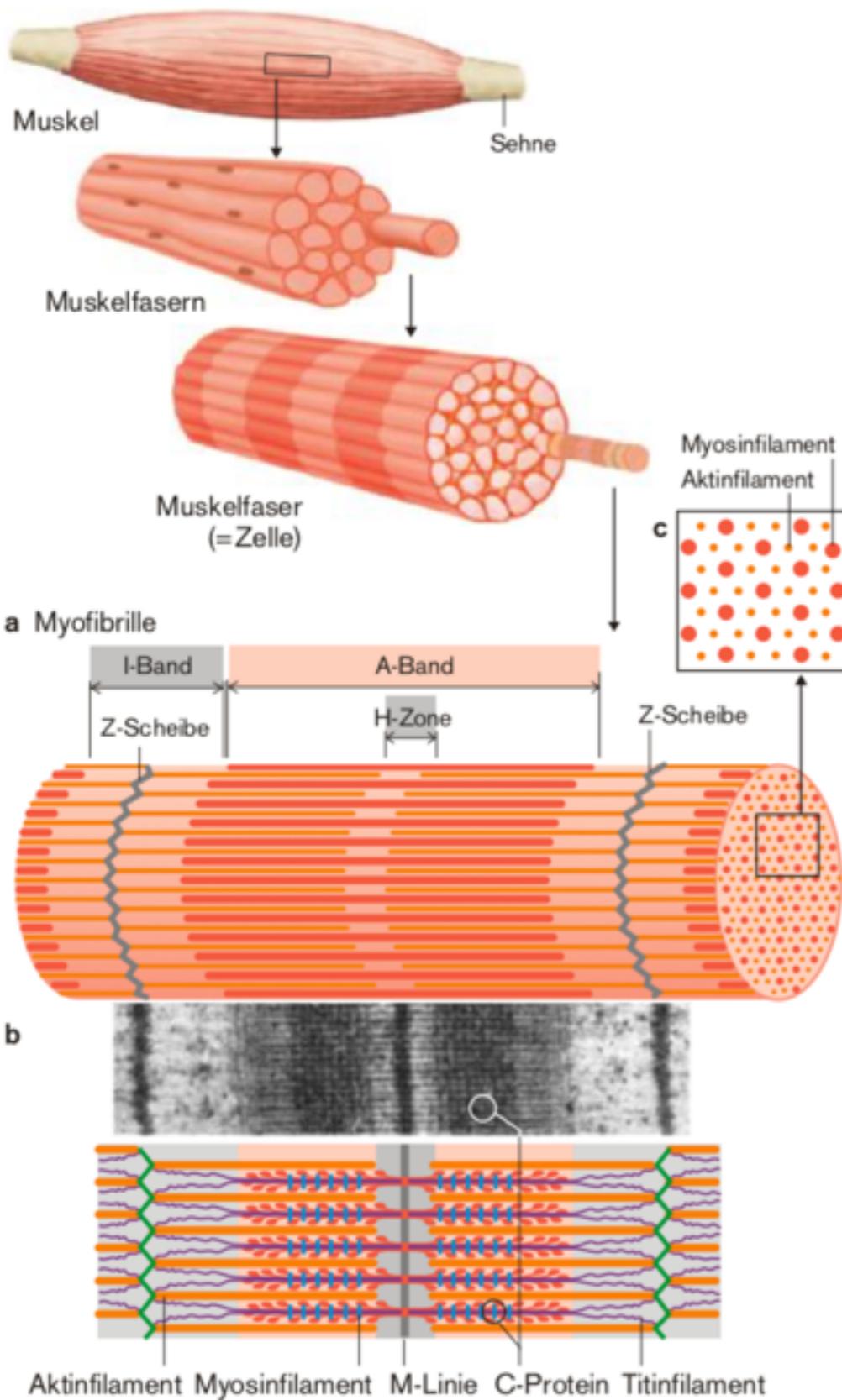
Elektromechanische Kopplung



Elektromechanische Kopplung

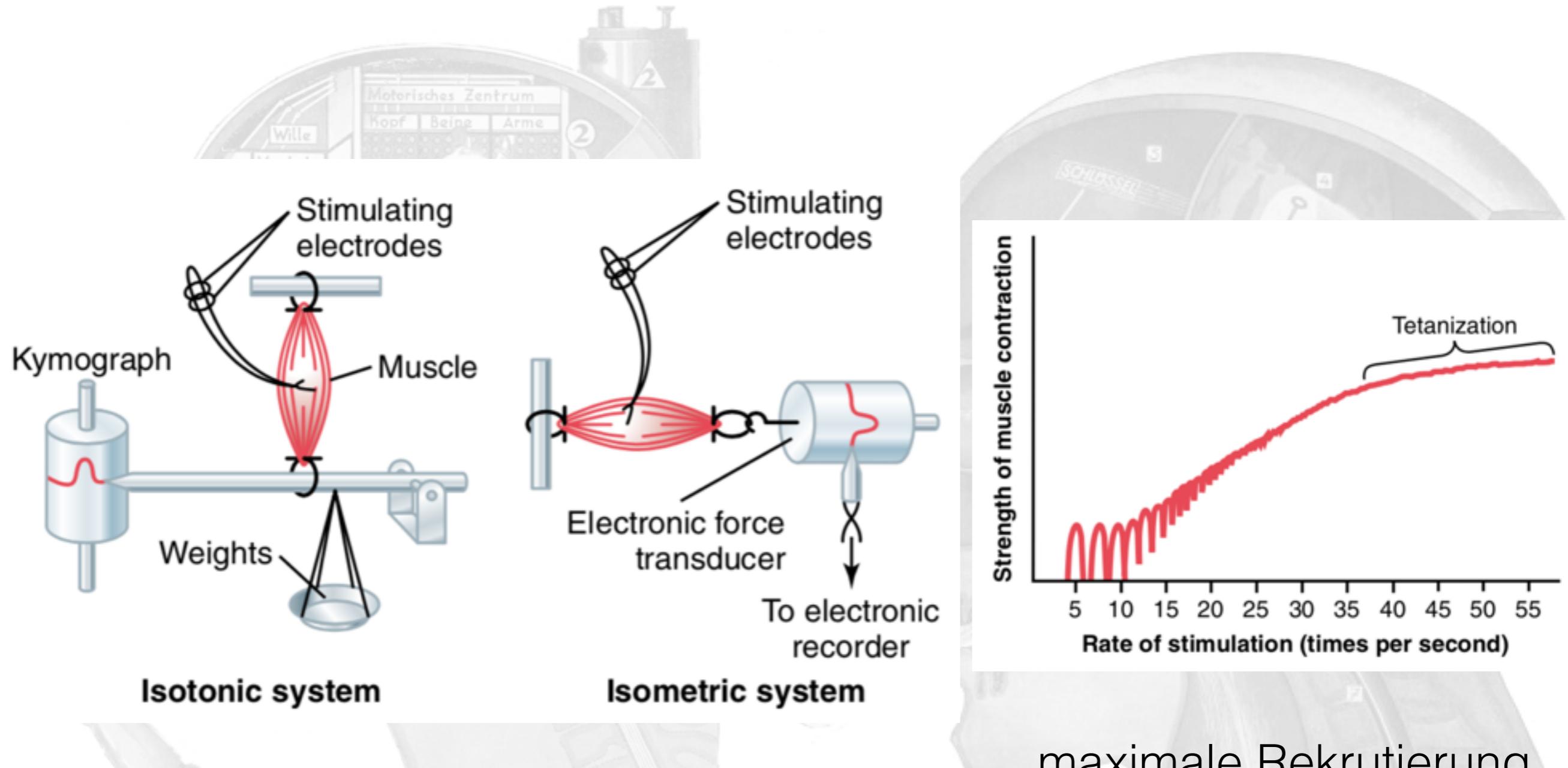


Kontraktion quergestreifter Muskulatur



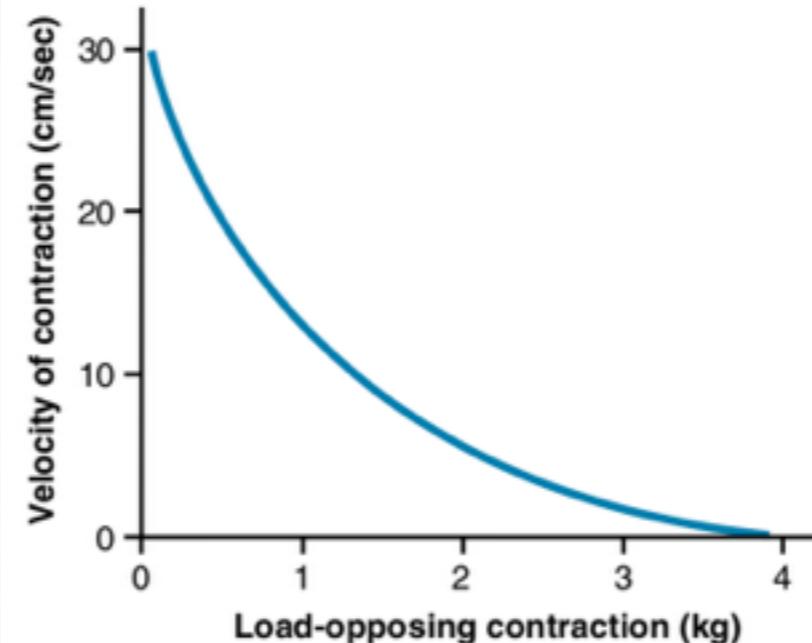
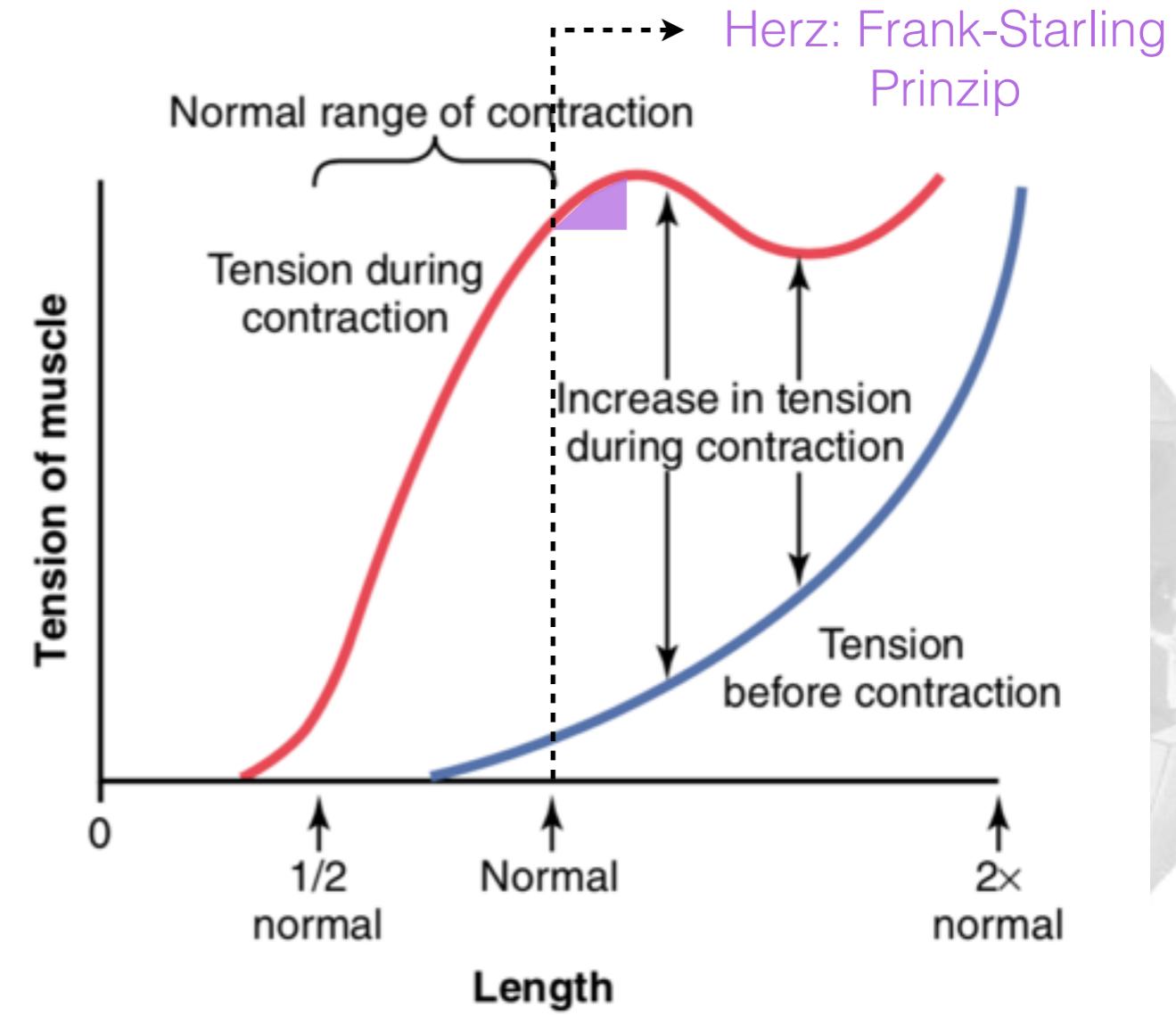
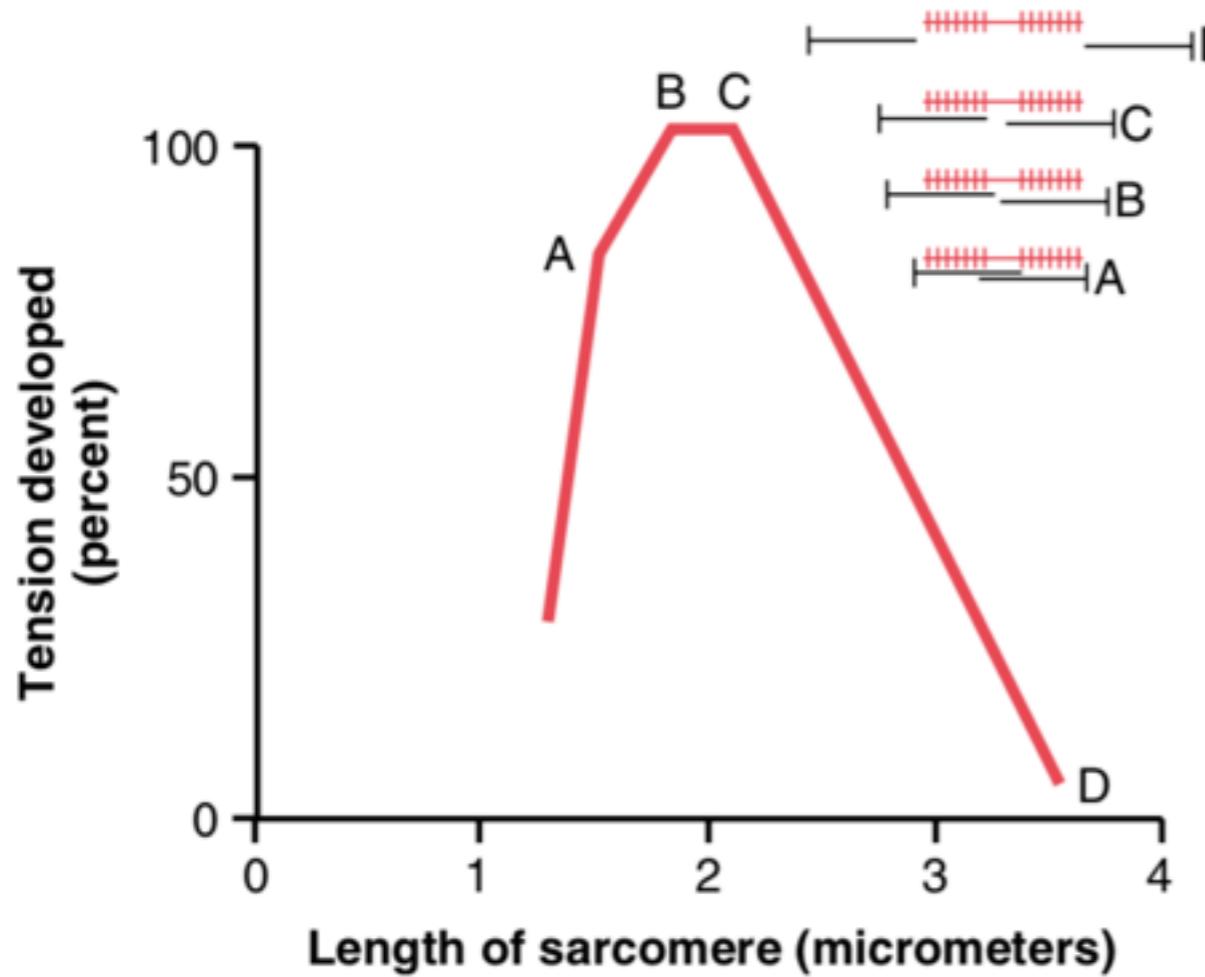
→ Binden-Kraftschlag-Lösen-Aufrichten

Kraftmessung

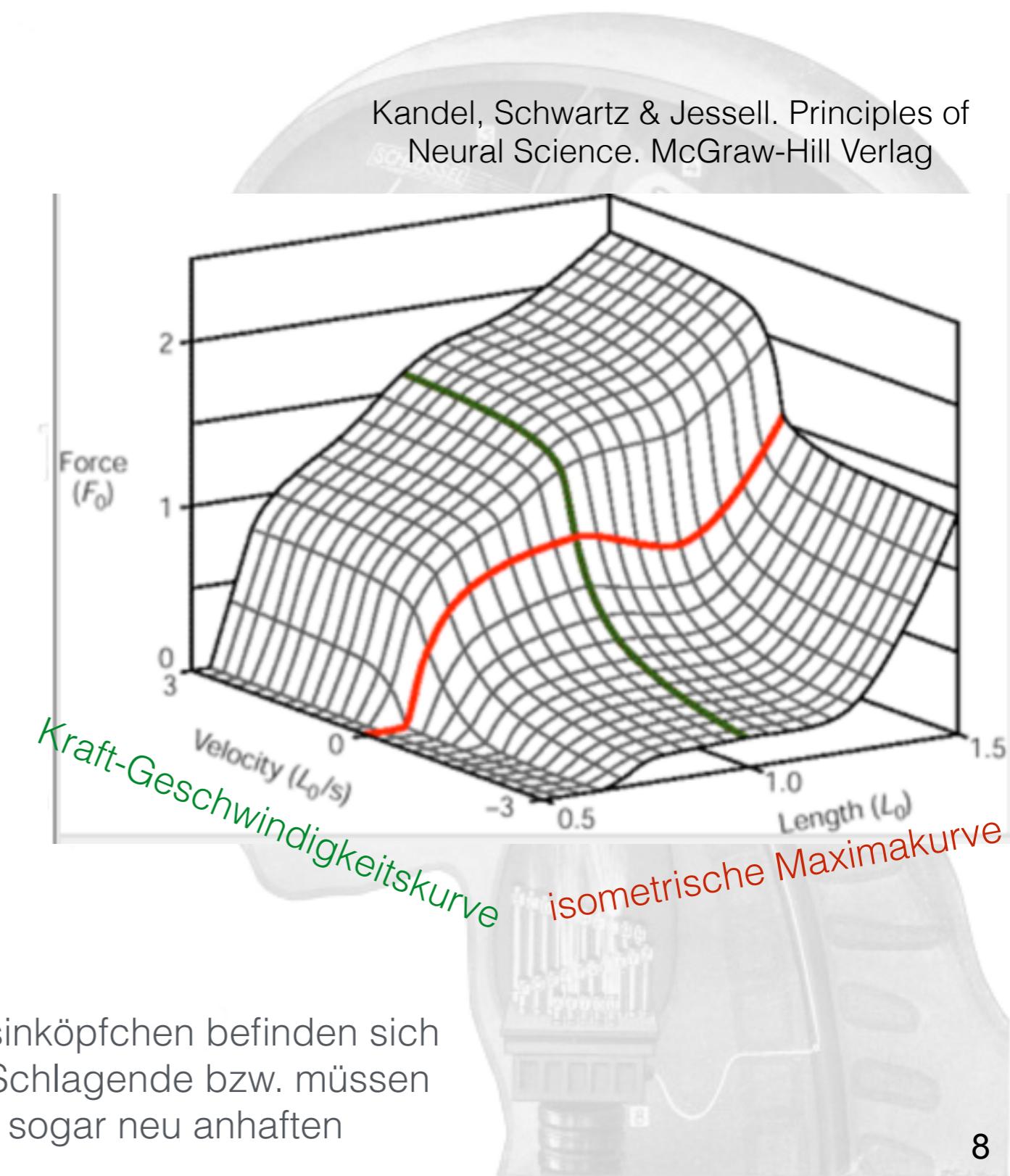
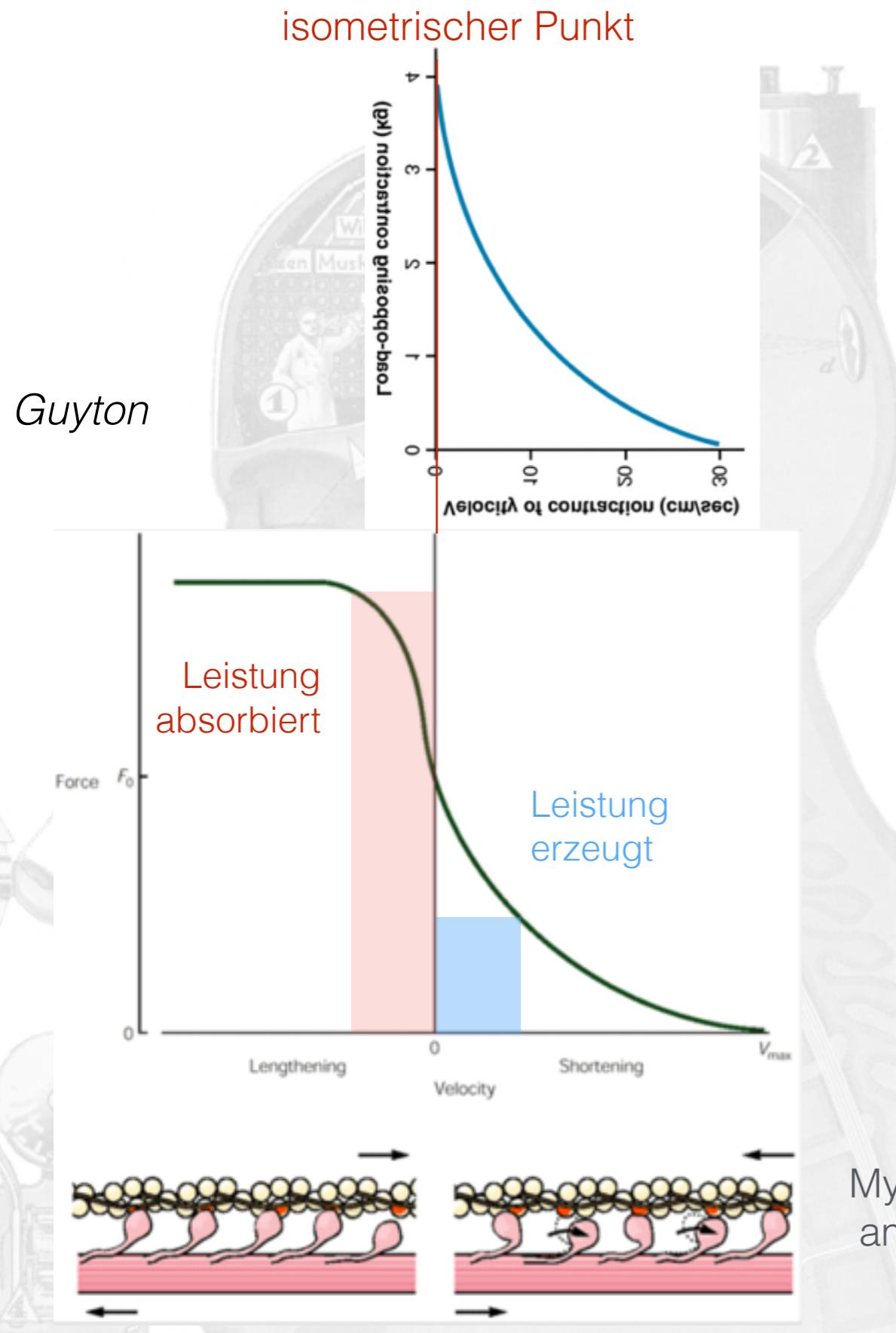


maximale Rekrutierung

Kontraktion quergestreifter Muskulatur

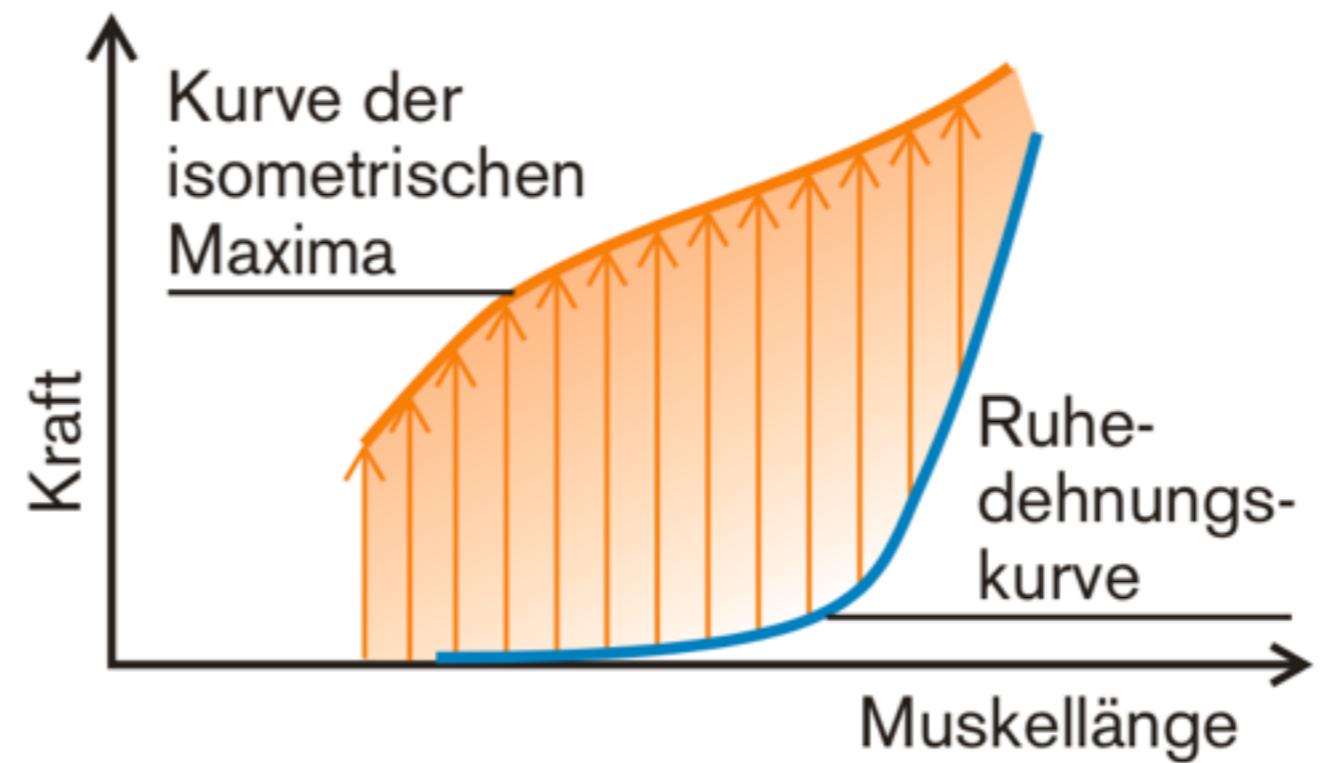
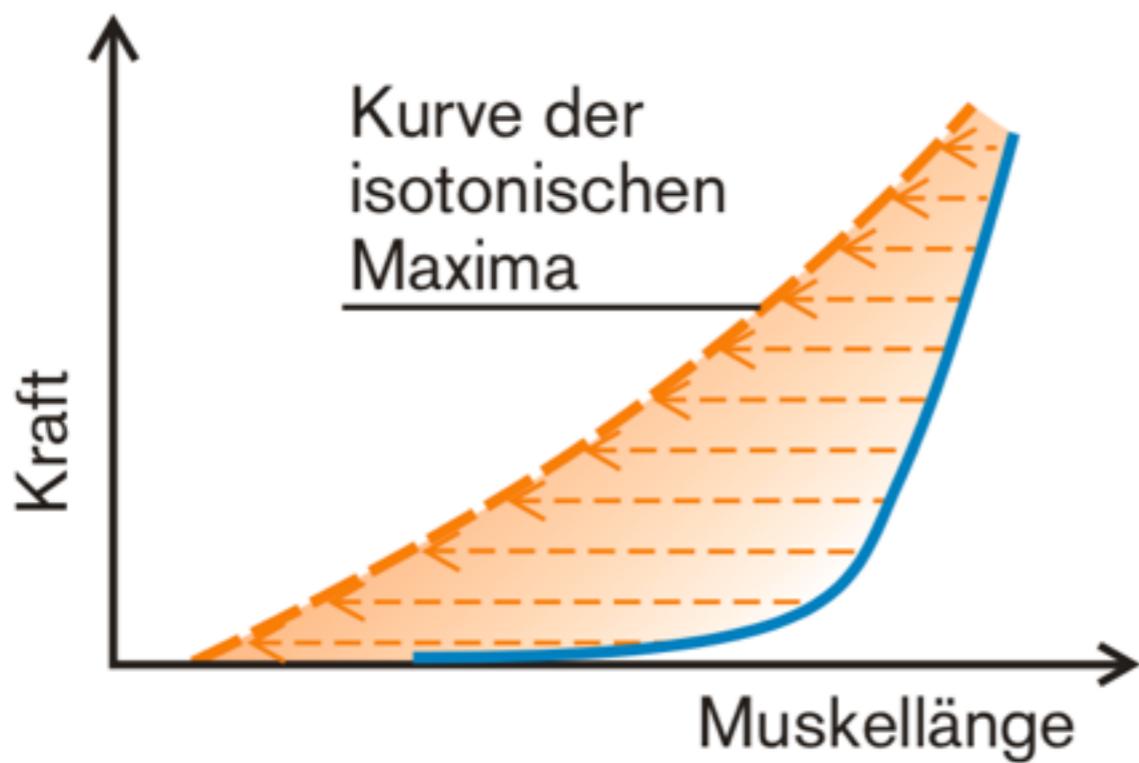


Die Gesamtkraft ist von Länge und Geschwindigkeit abhängig



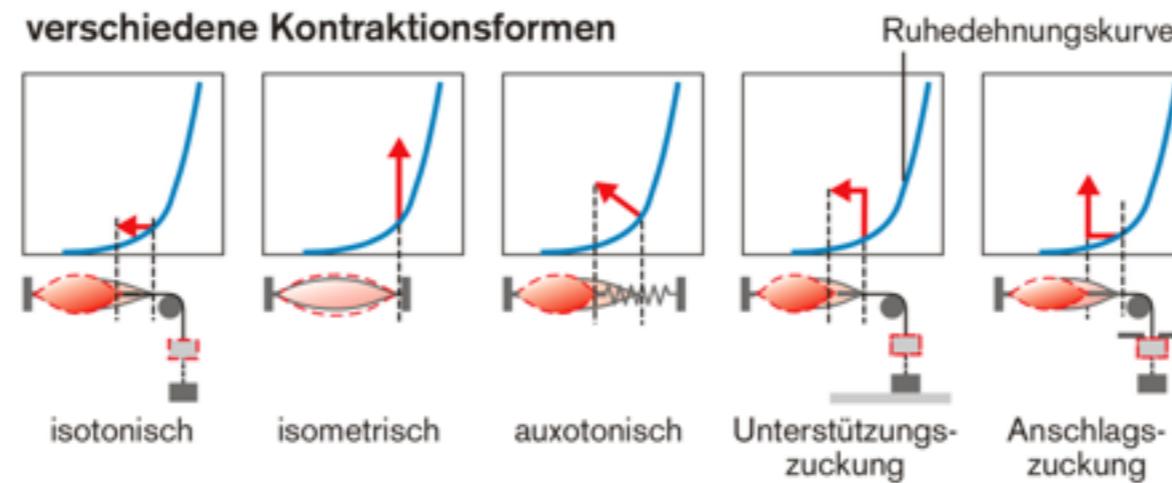
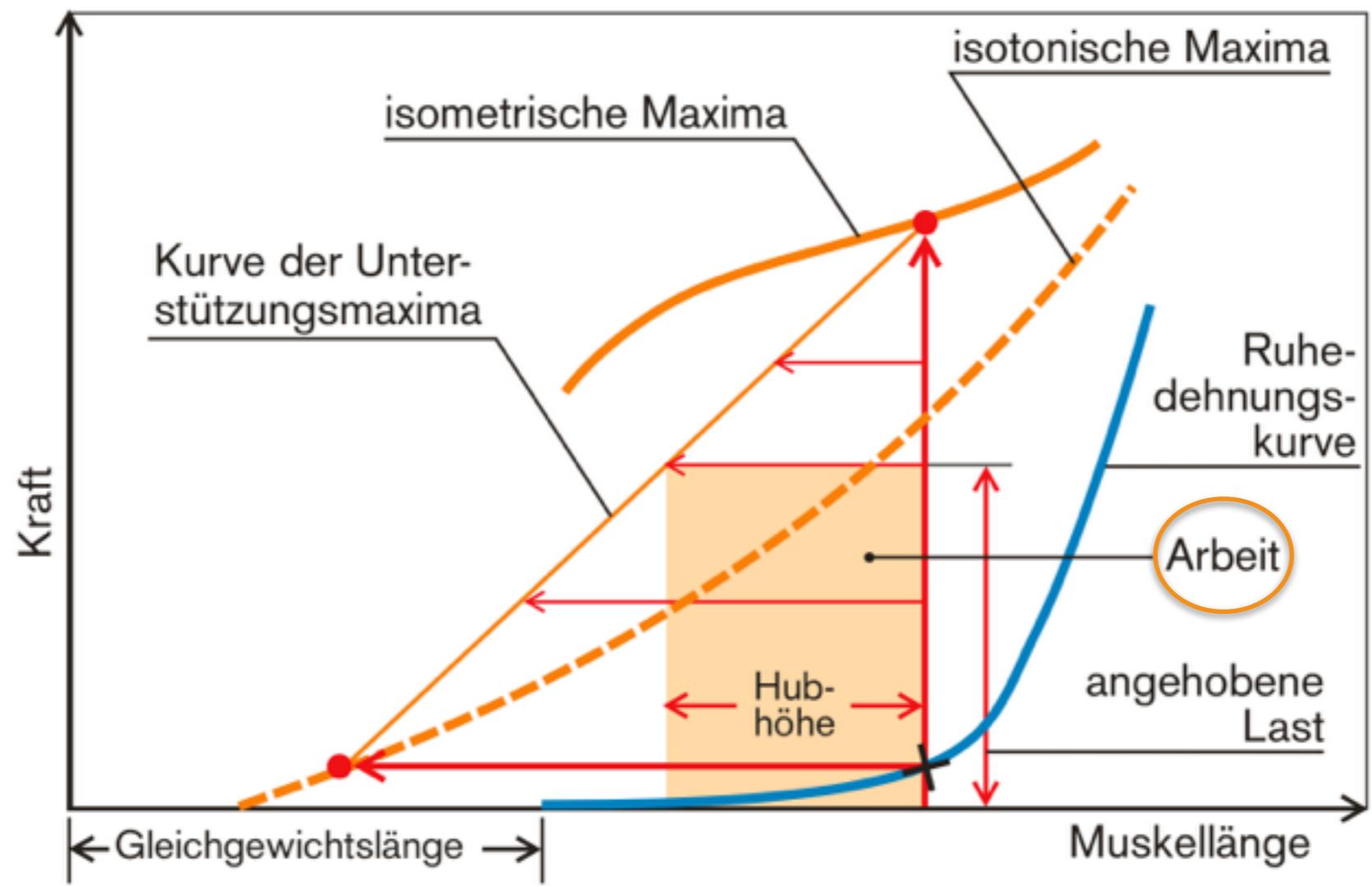
Kraft-Länge-Kurven

isotonische und isometrische Kontraktion

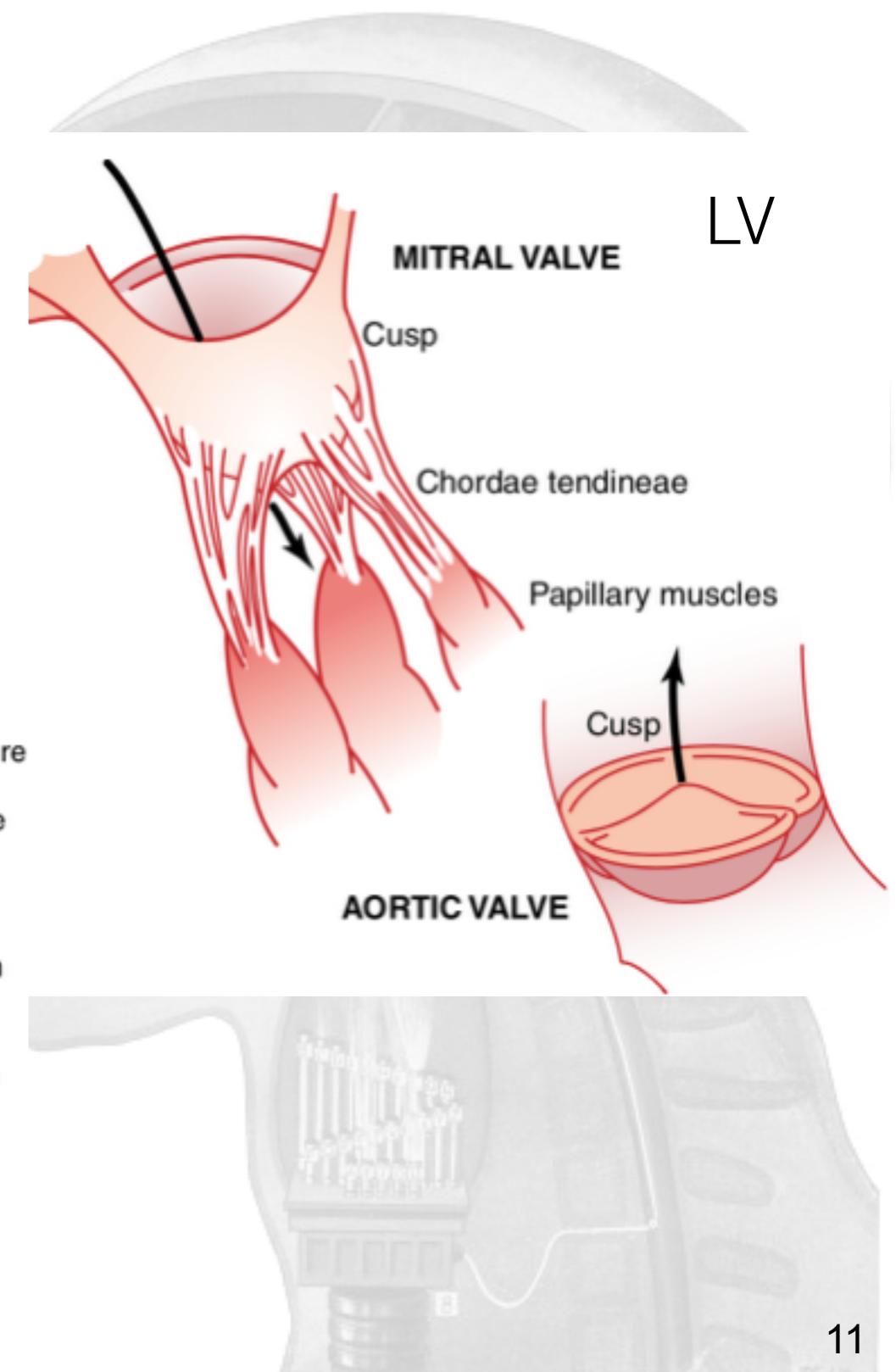
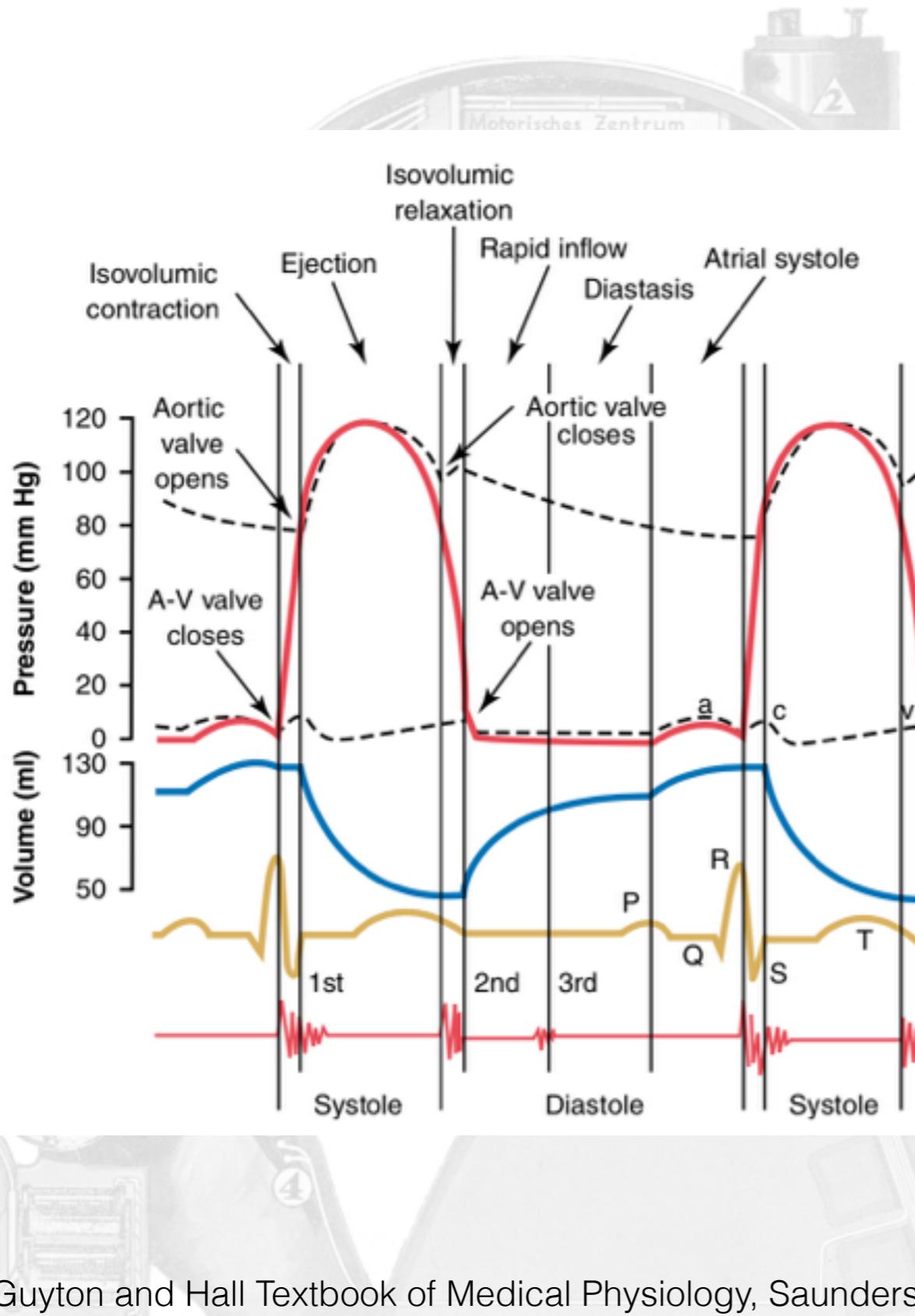


Alles zusammen

Arbeitsdiagramm des Skelettmuskels

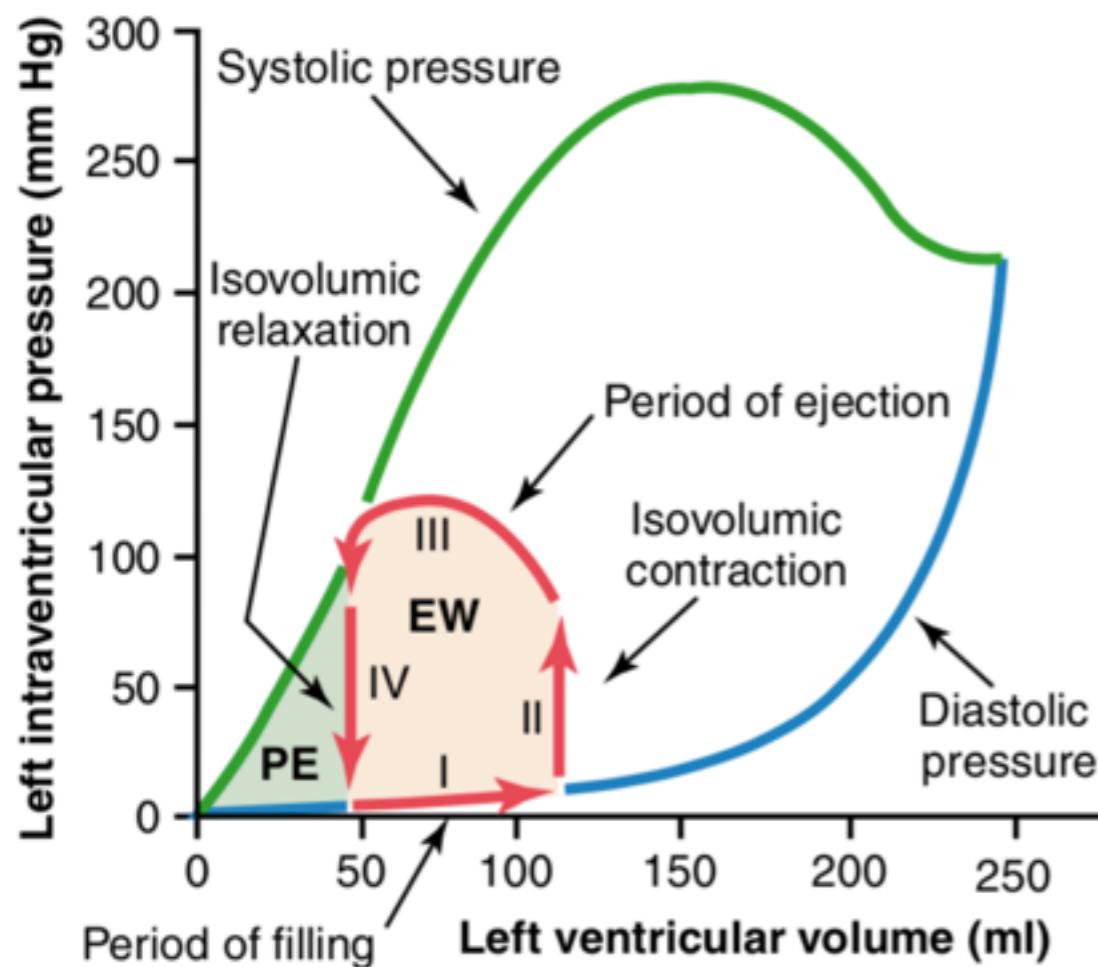


Einer der wichtigsten Muskeln bildet einen Hohlraum; das Herz

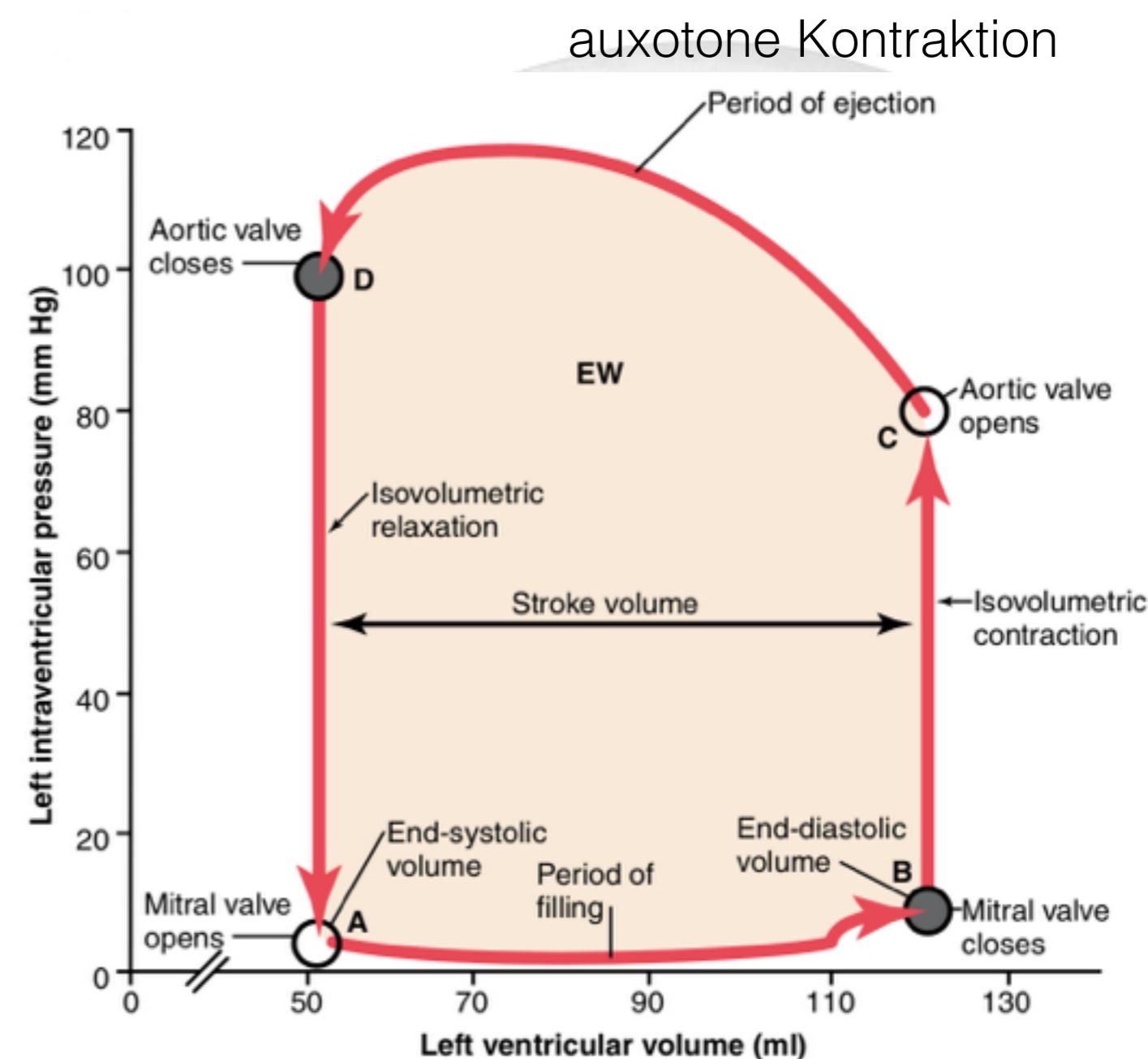


Herzmuskelarbeit

Isometrische Maximakurve



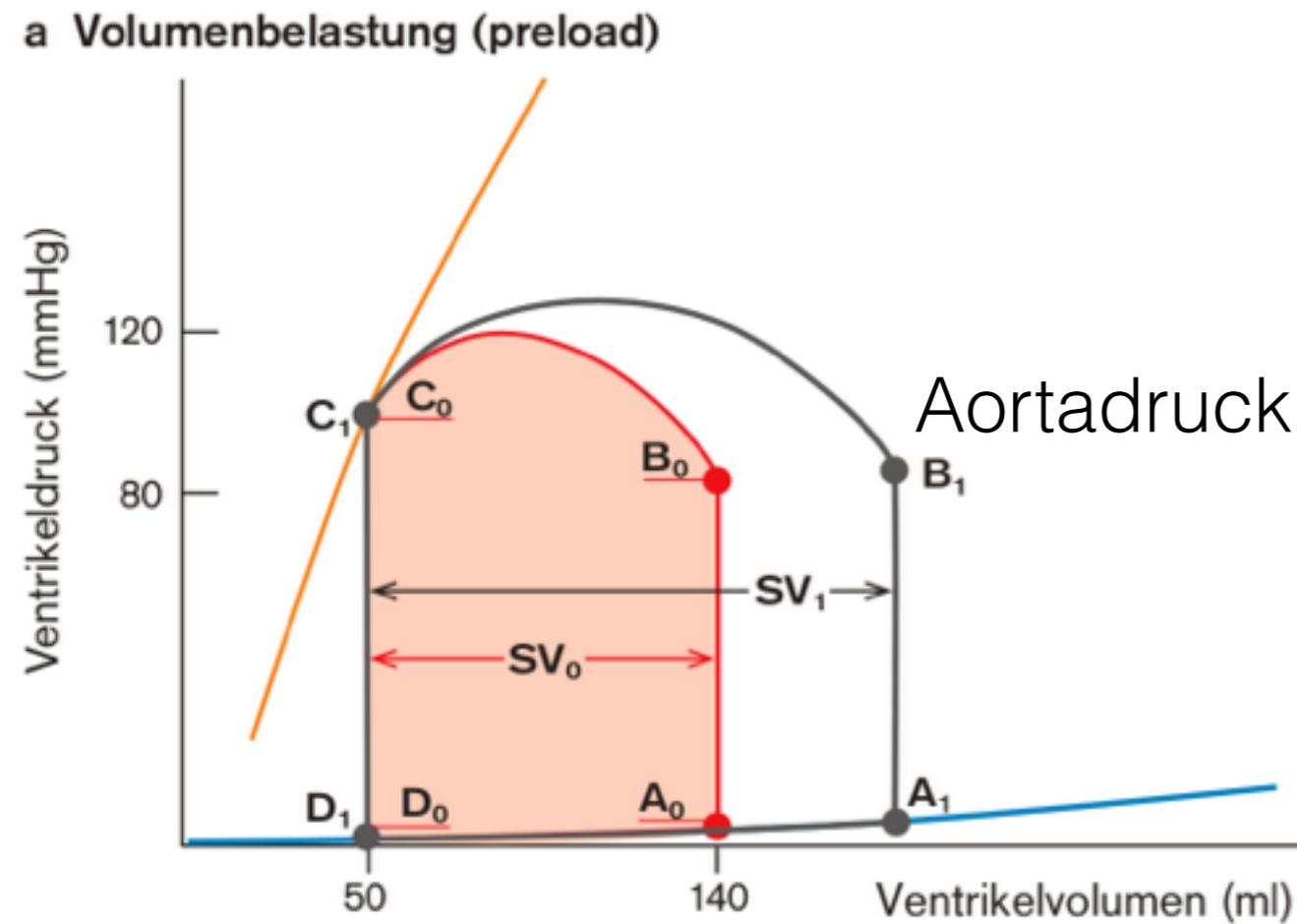
Ruhedehnungskurve



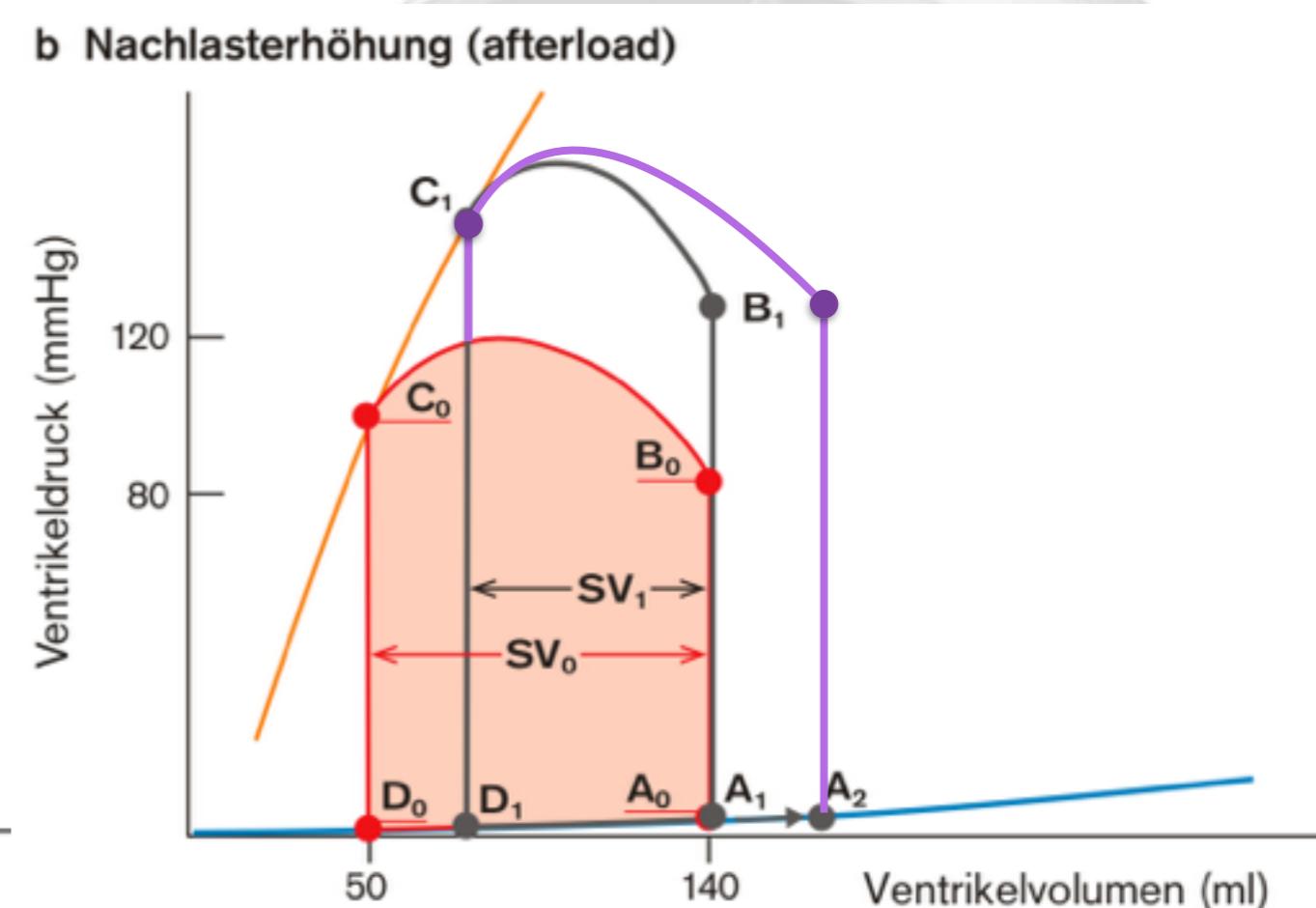
EW external work

Das Herz passt sich Änderungen der Druckverhältnissen an

Vorlast



Nachlast

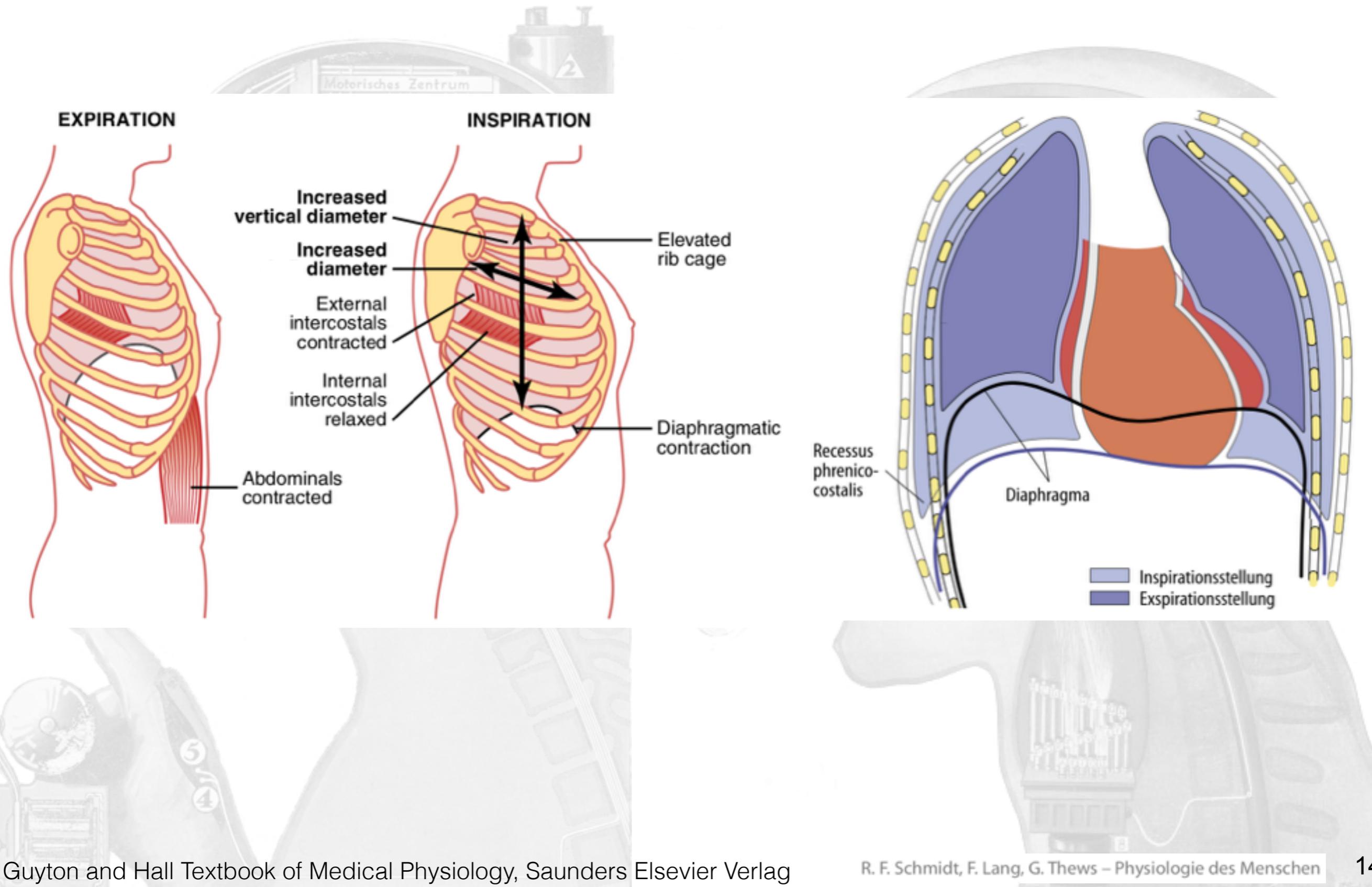


venöser Rückfluß, Atriumdruck
Frank-Starling

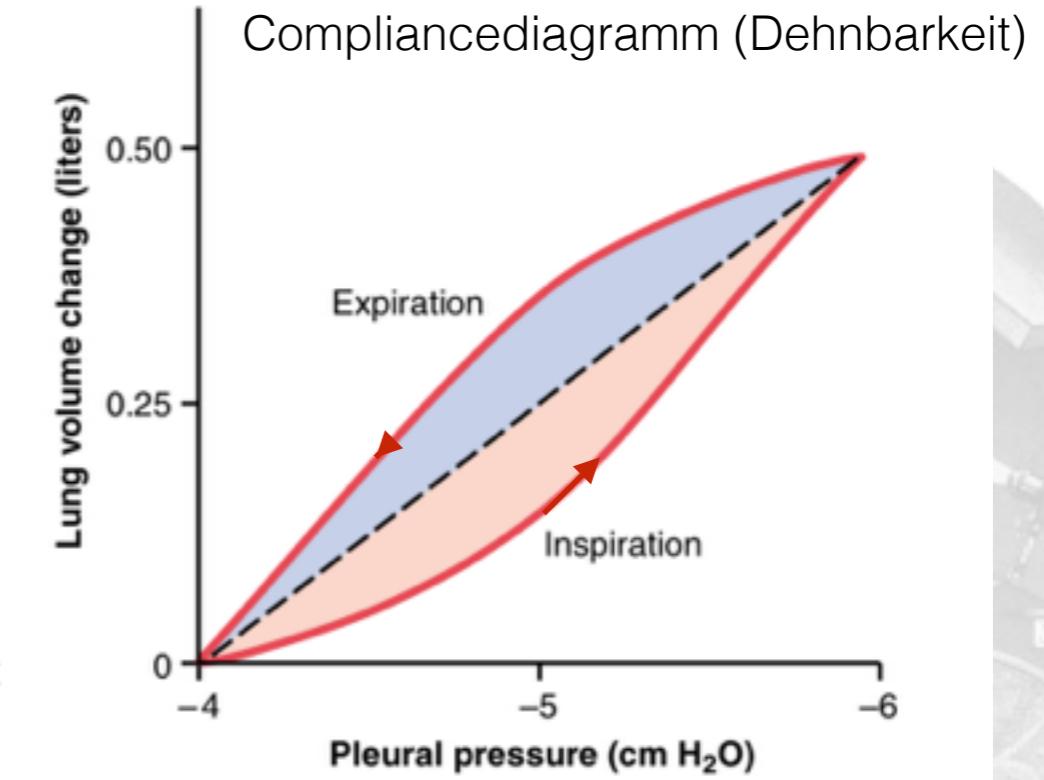
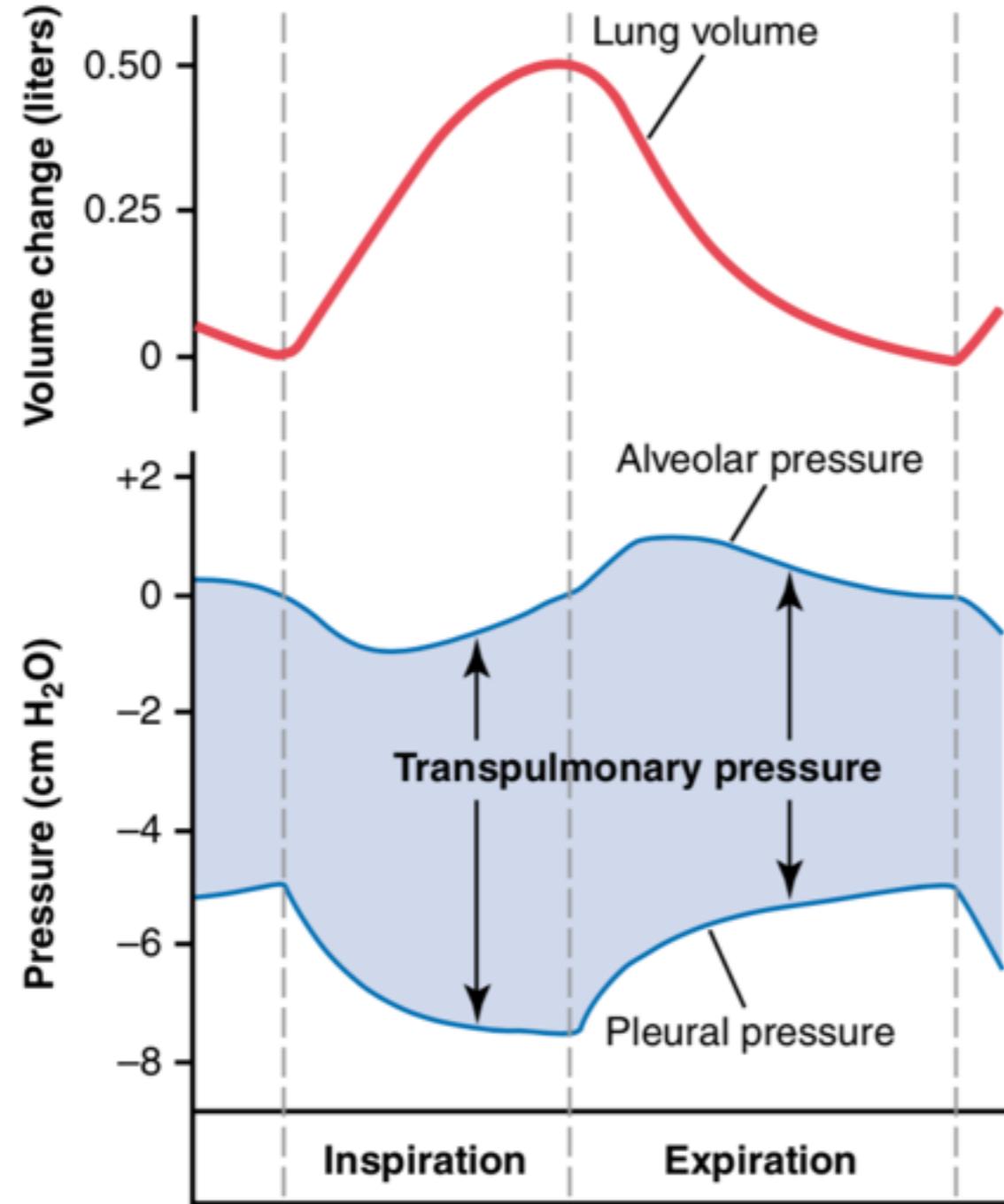
SV

Bluthochdruck, Aorta
erste SV kleiner, Ventikelrestvol. grösser
ab nächster Füllung greift Frank-Starling
und korrigiert

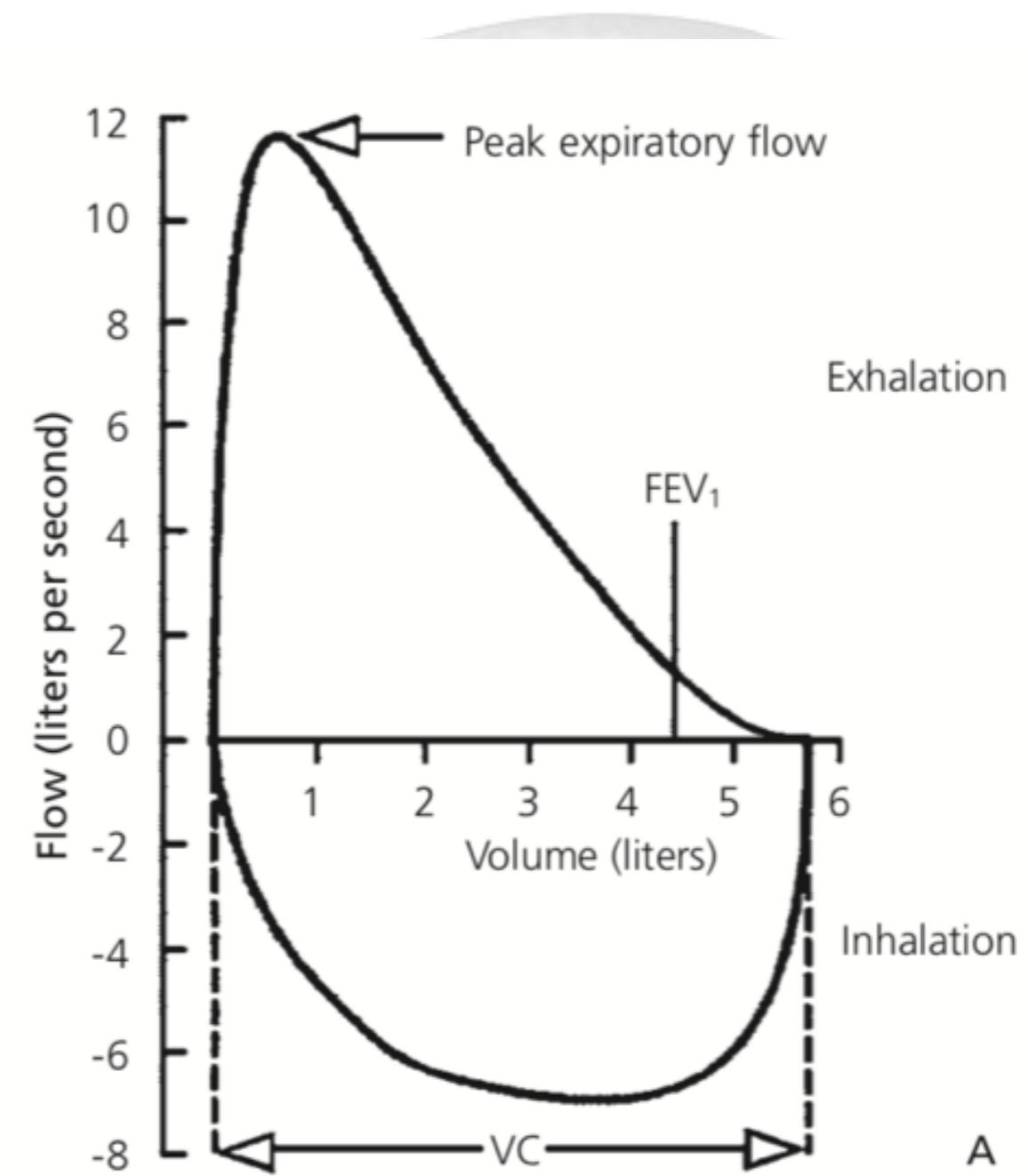
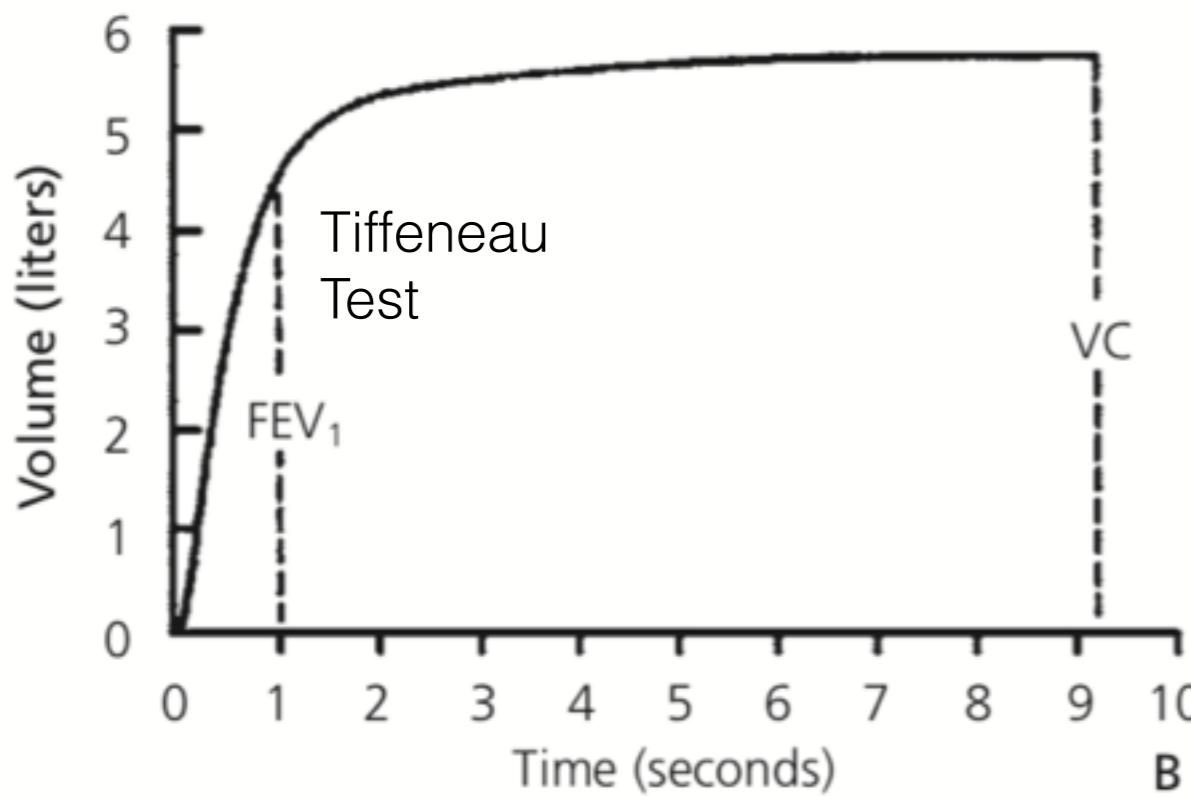
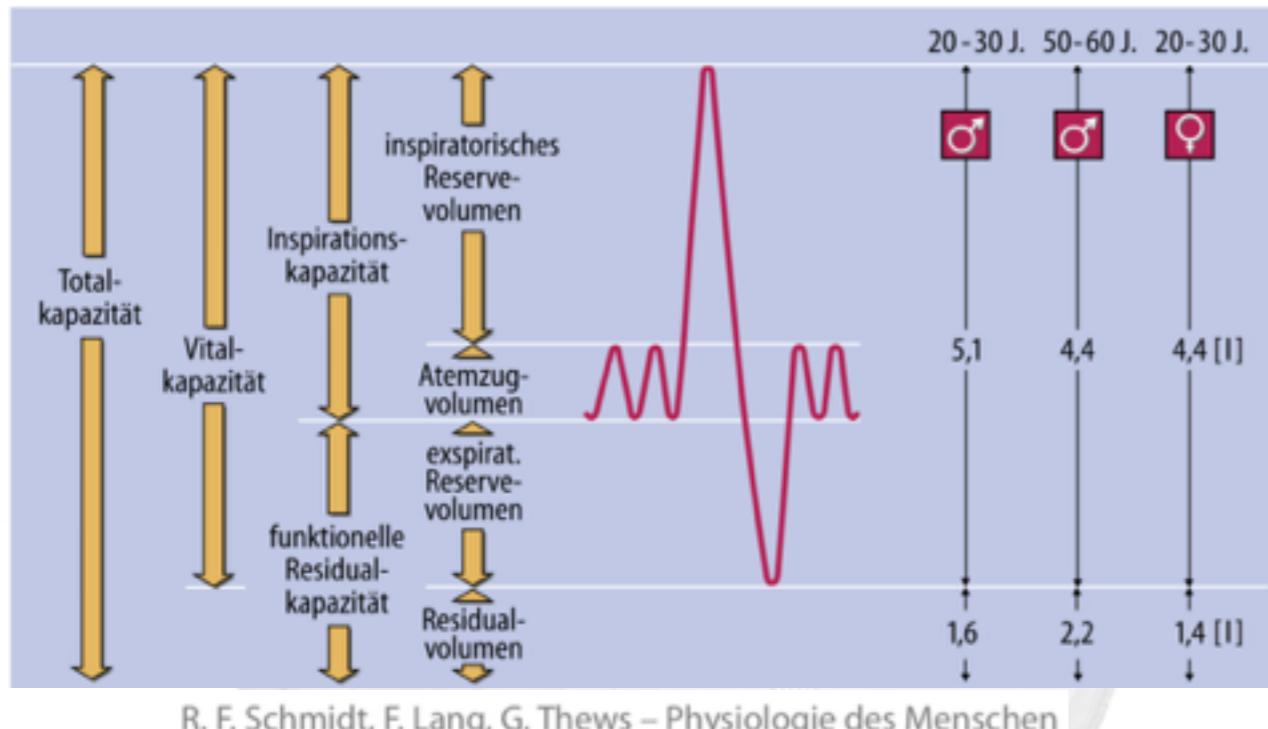
Atemmechanik



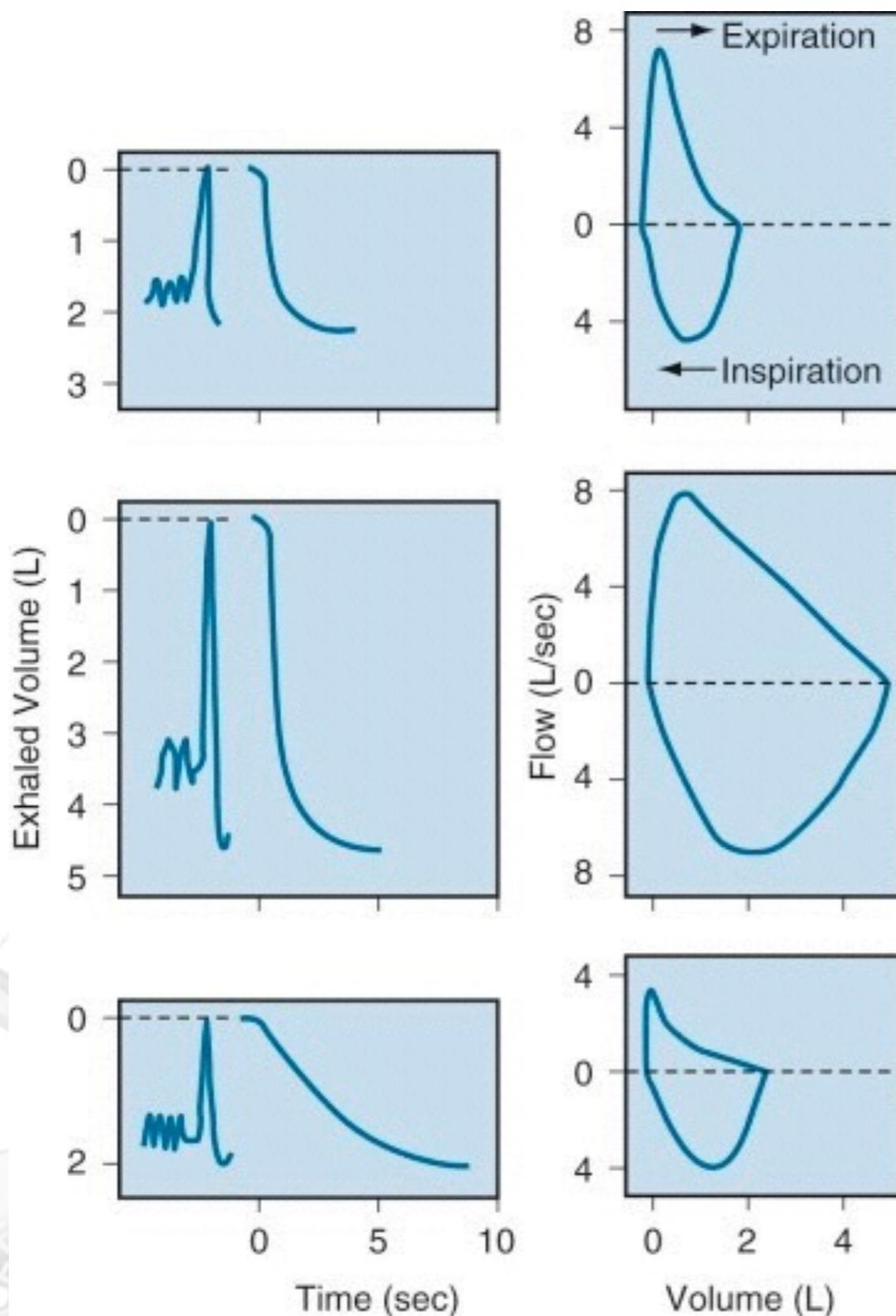
Atemmechanik



Spirometrie



Spirometrie



Restriktive Ventilationsstörungen
Compliance ↓
Lungenvolumina ↓
FEV1/FVK kann unverändert sein
(Ödem, Traumata z.B. Rippenfraktur)

Gesund

Obstruktive Ventilationsstörungen
Atemwegswiderstand ↑
funktionelle Residualkapazität ↑
Residualvolumen ↑
(Asthma Bronchiale, COPD, chr. Bronchitis)

↓
Lungenüberblähung
(Emphysem)