

# The CO<sub>2</sub> body store and CO<sub>2</sub> dynamics

Deutsches SMART  
2019, Frankfurt



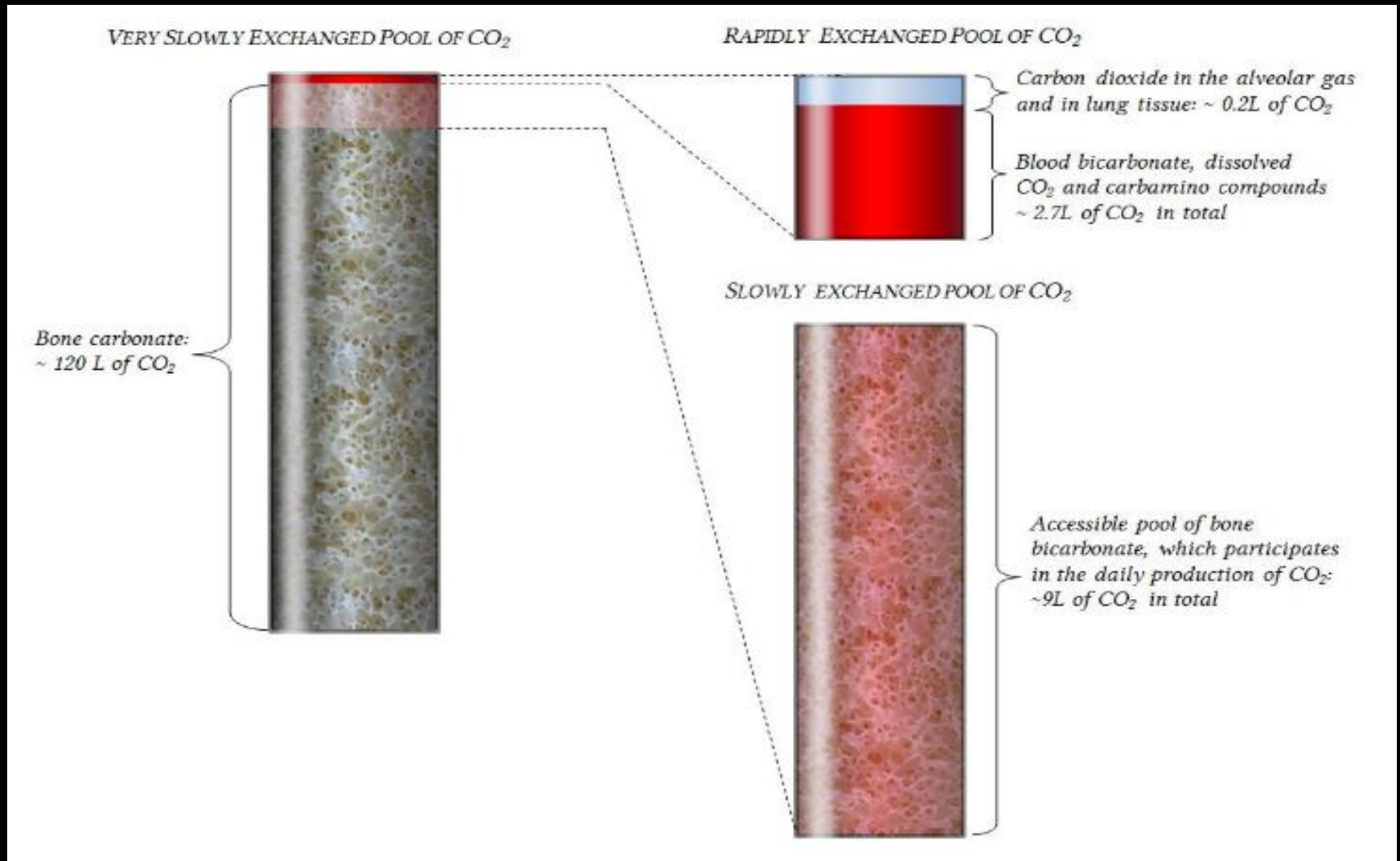
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## CO<sub>2</sub> stores in a 70-kg man at sea level

Estimate of Magnitude	Liters	Form of Storage
Lung	0,2	CO <sub>2</sub> gas in functional residual capacity of lung; bicarbonate in lung tissue
Blood	2,7	Dissolved CO <sub>2</sub> , bicarbonate, carbamino CO <sub>2</sub> , ?
Tissue	120	Dissolved CO <sub>2</sub> , bicarbonate, carbonate (in bone), ? Carbamino CO <sub>2</sub>
Total	123	

# CO<sub>2</sub> stores in standard man under standard conditions



## CO<sub>2</sub> bone compartment:

- 30 % bicarbonate,
- 70% carbonate

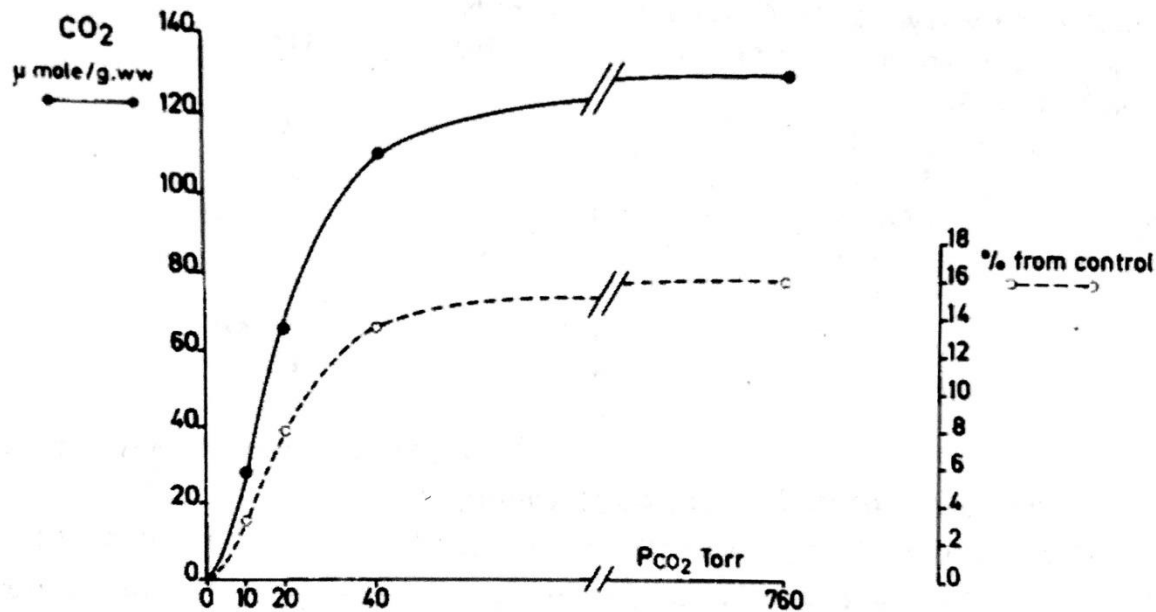
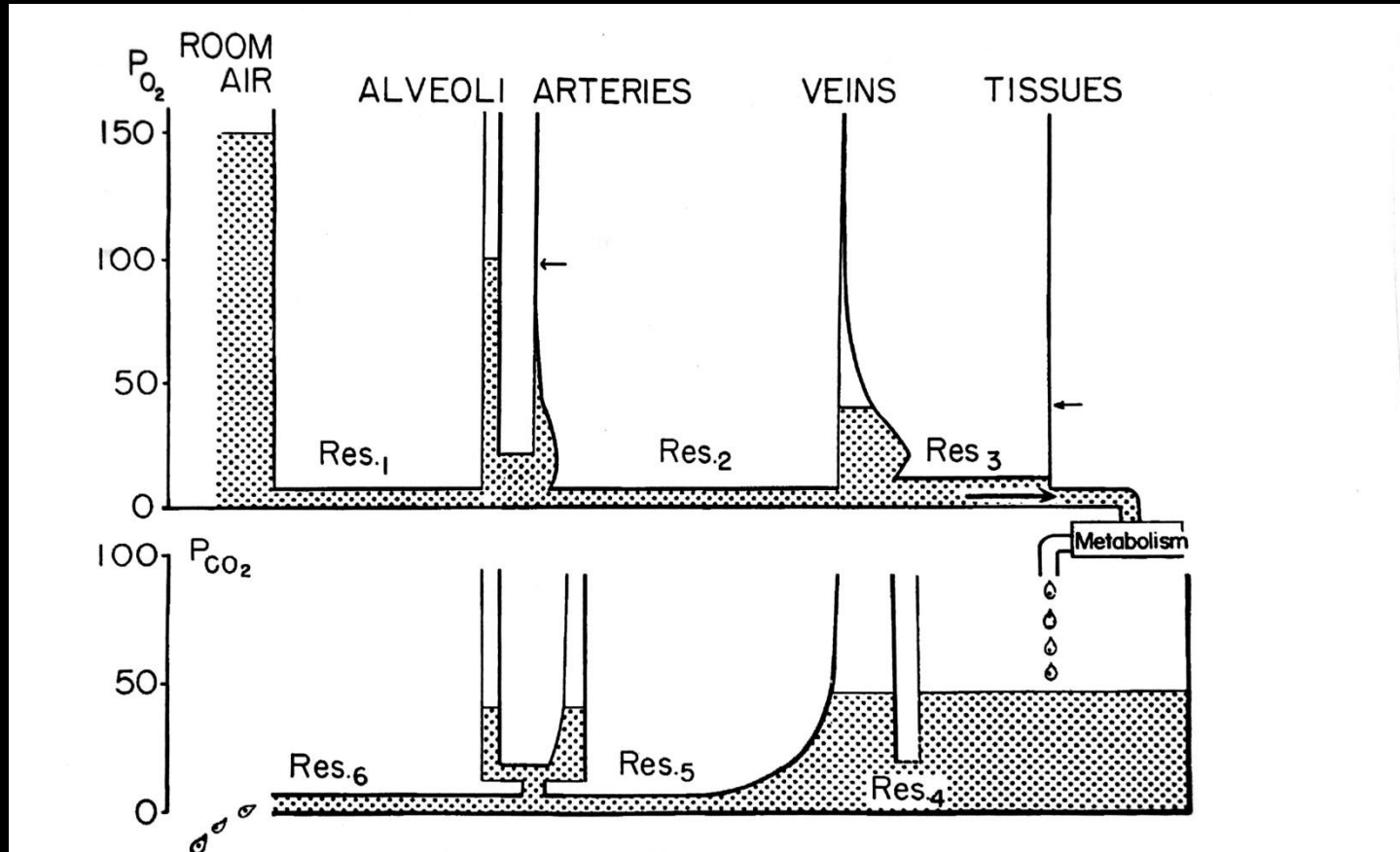
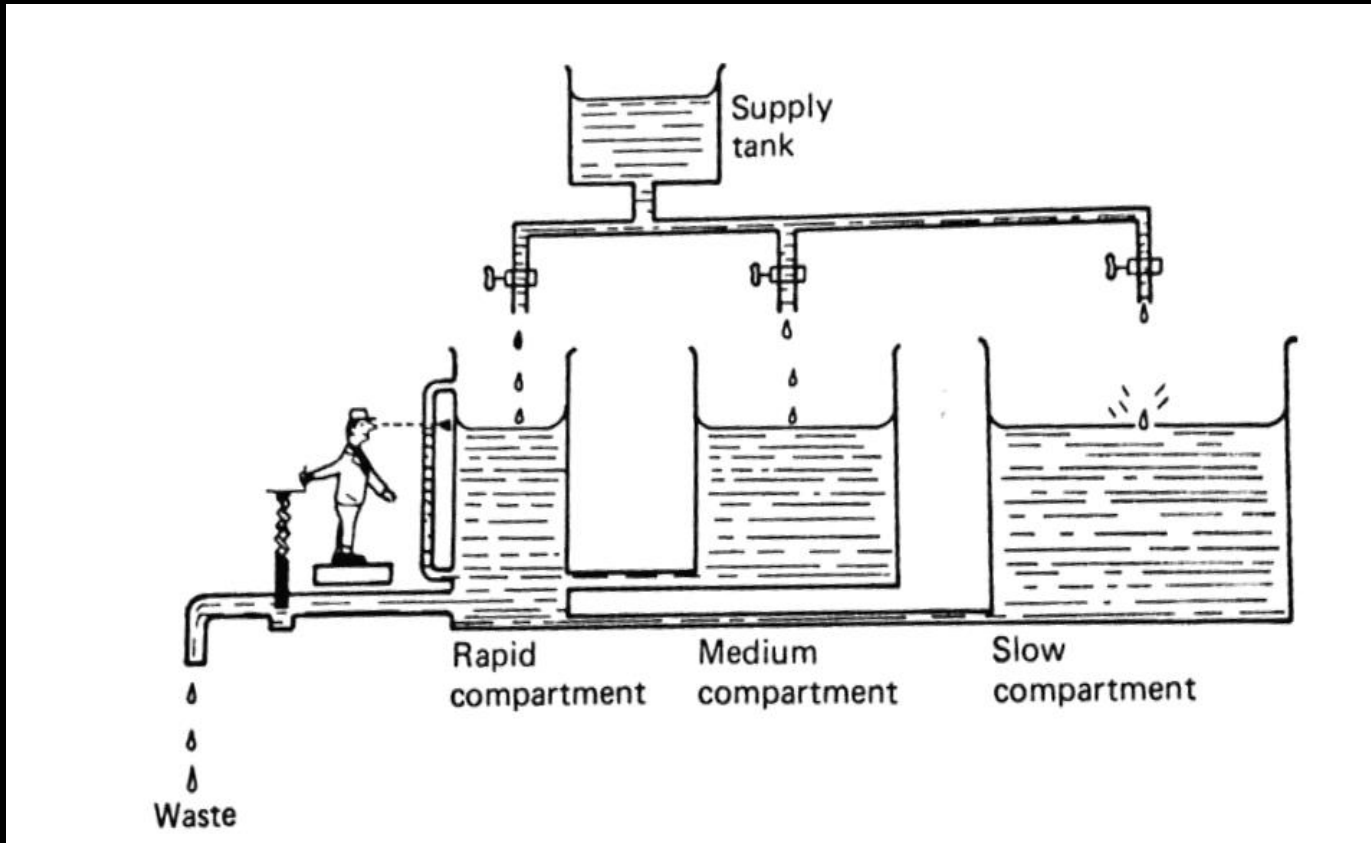


Fig. 2. CO<sub>2</sub> binding *in vitro* in rat cortical bone as a function of P<sub>CO<sub>2</sub></sub>.

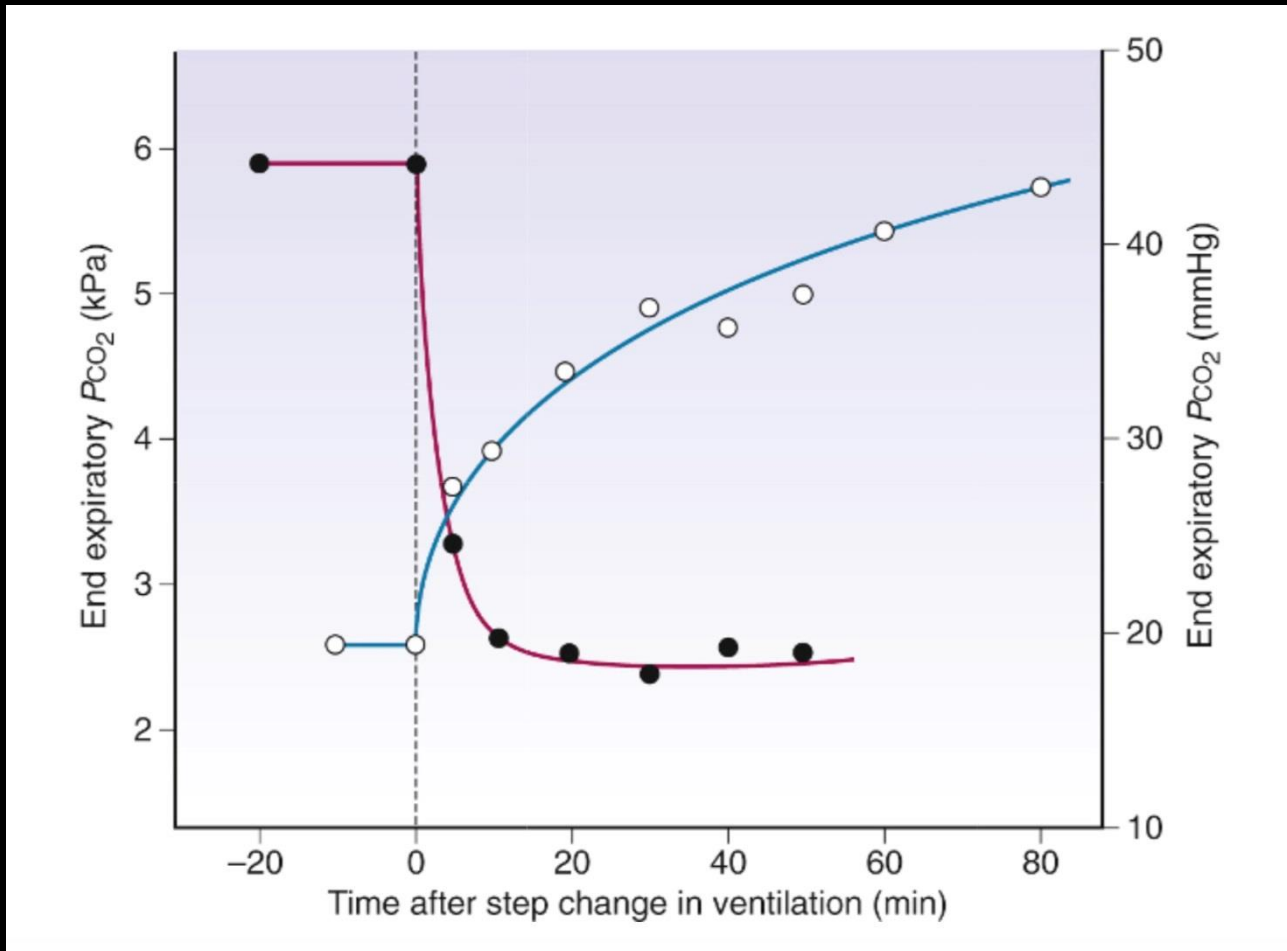
# Oxygen and CO<sub>2</sub> store (acute changes)



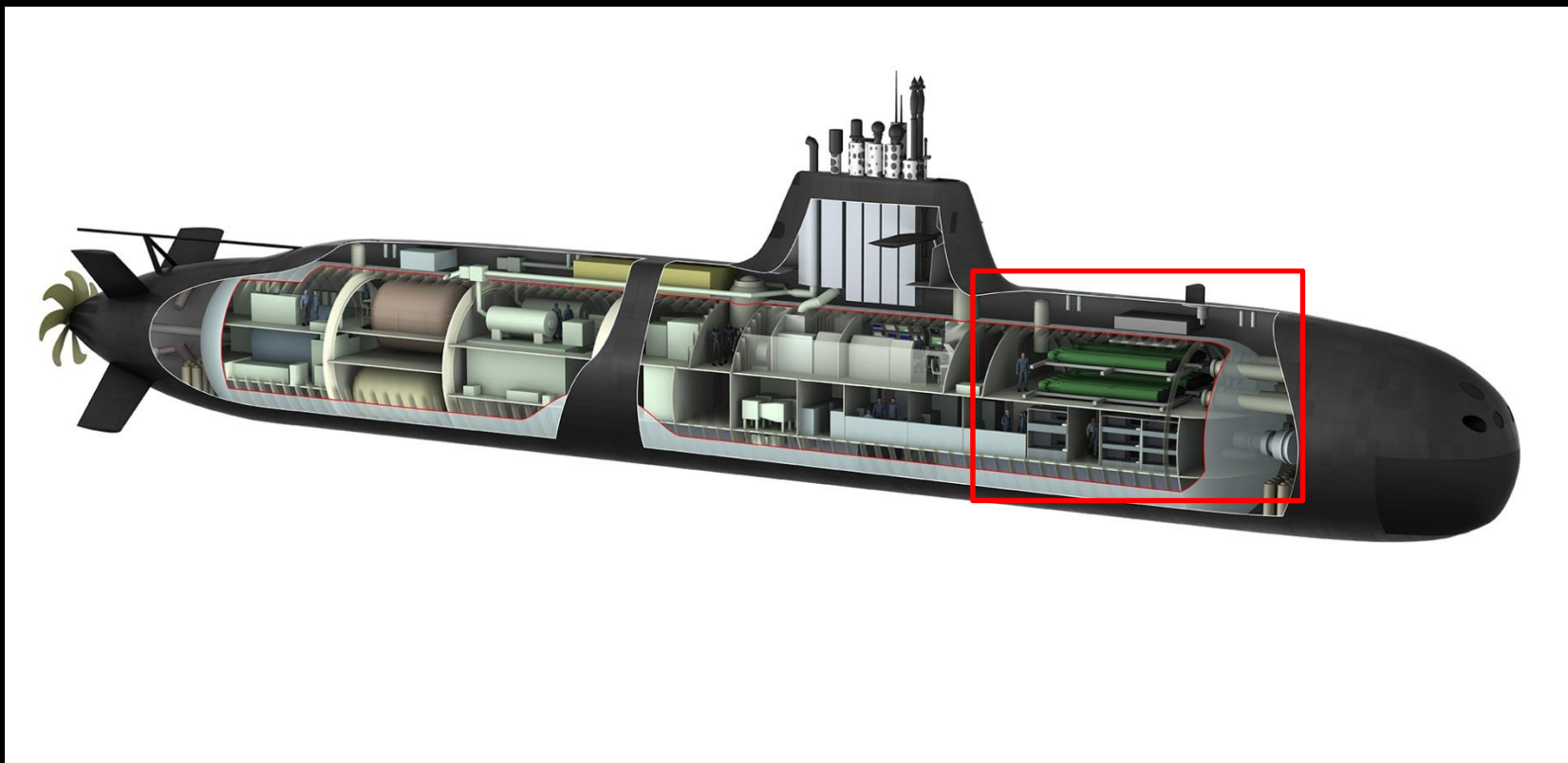
# COMPARTMENT MODEL OF CO<sub>2</sub> STORES



# SUDDEN CHANGES IN MECHANICAL VENTILATION



# USS HADDOCK



9 days of room air

42 days 1,5% CO<sub>2</sub>

9 days room air

VCO<sub>2</sub> : 99 \*  
(ml/min/m<sup>2</sup>)

82,8\*

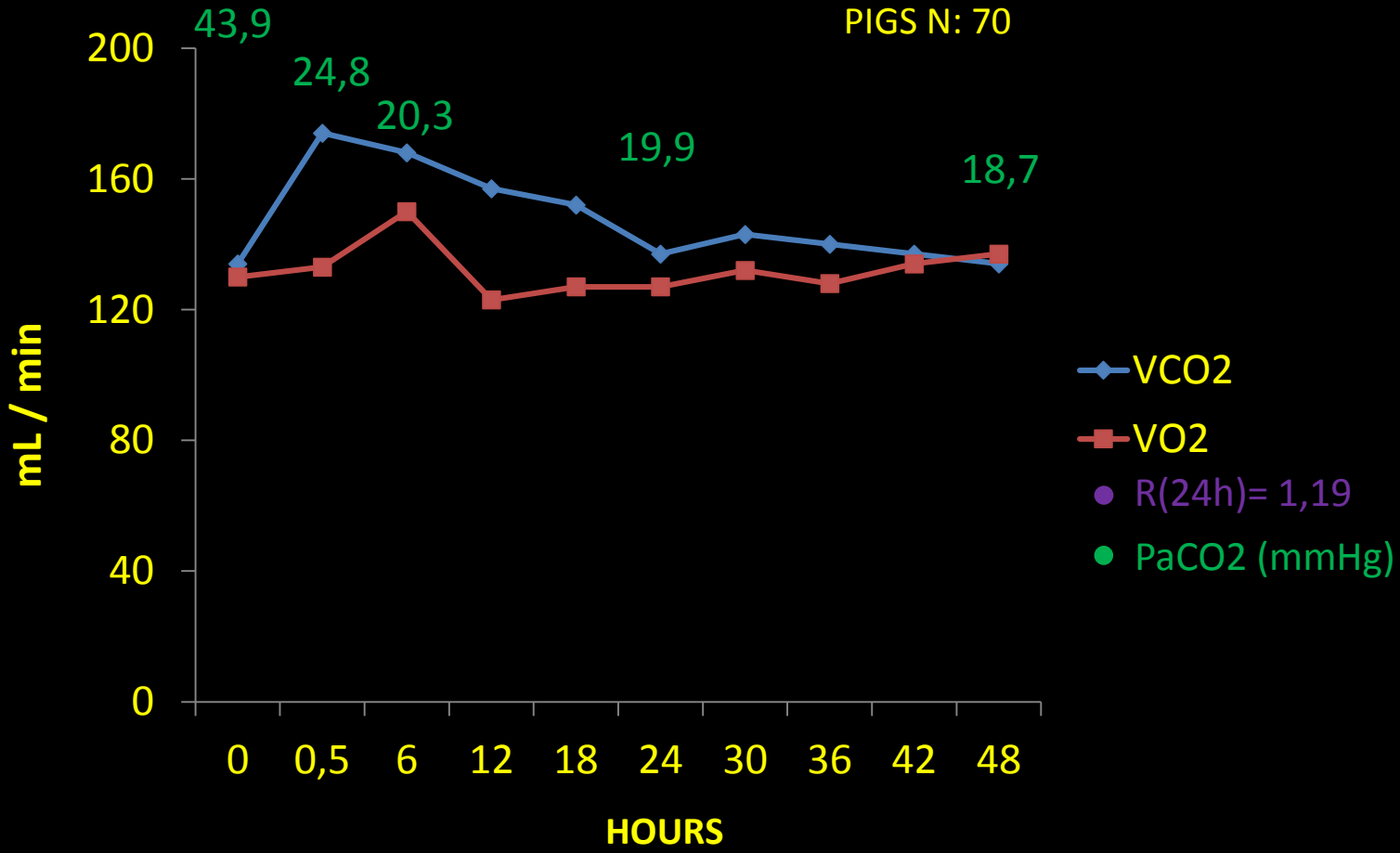
110\*

\*p<0.01

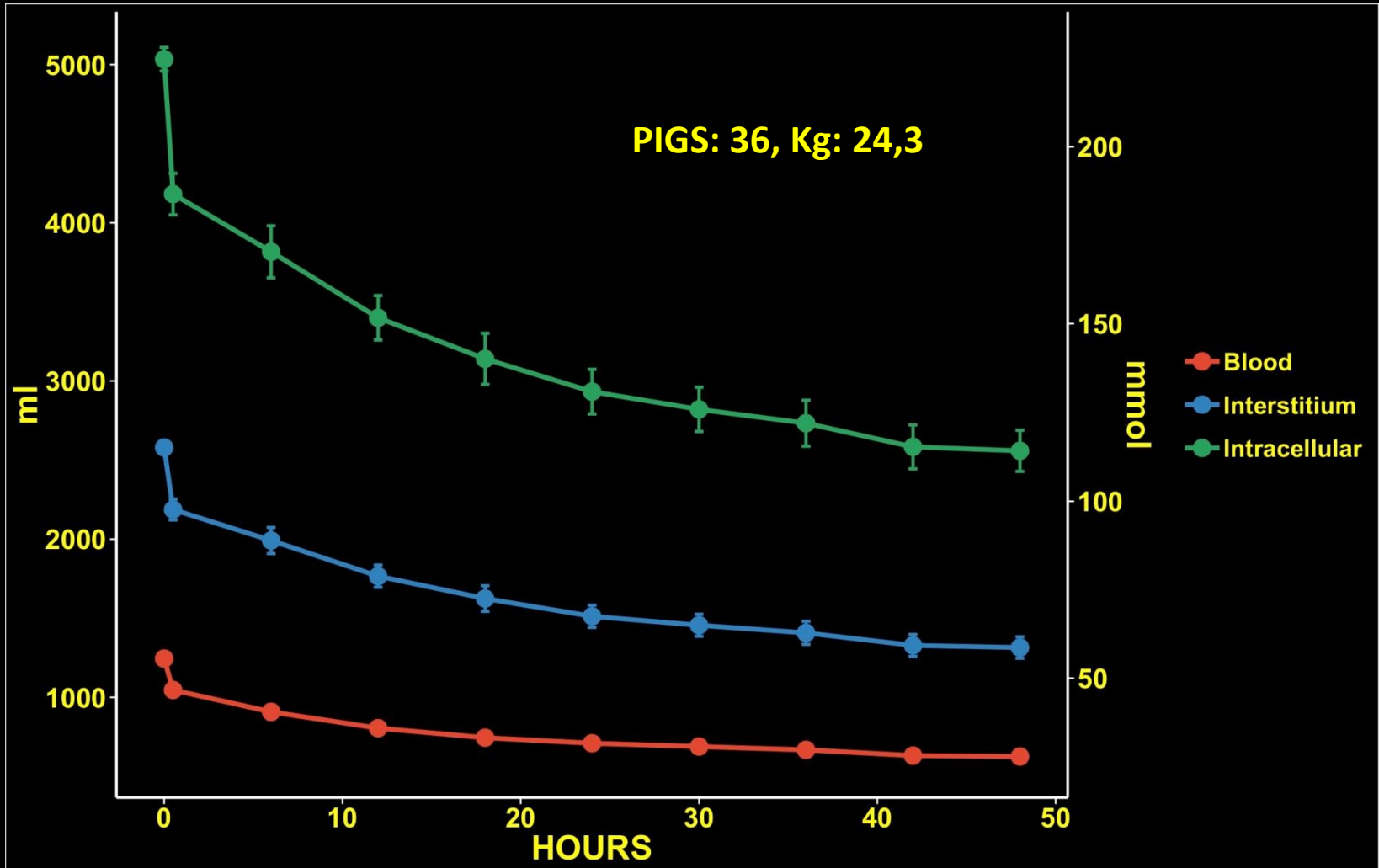


# VO2 and VCO2

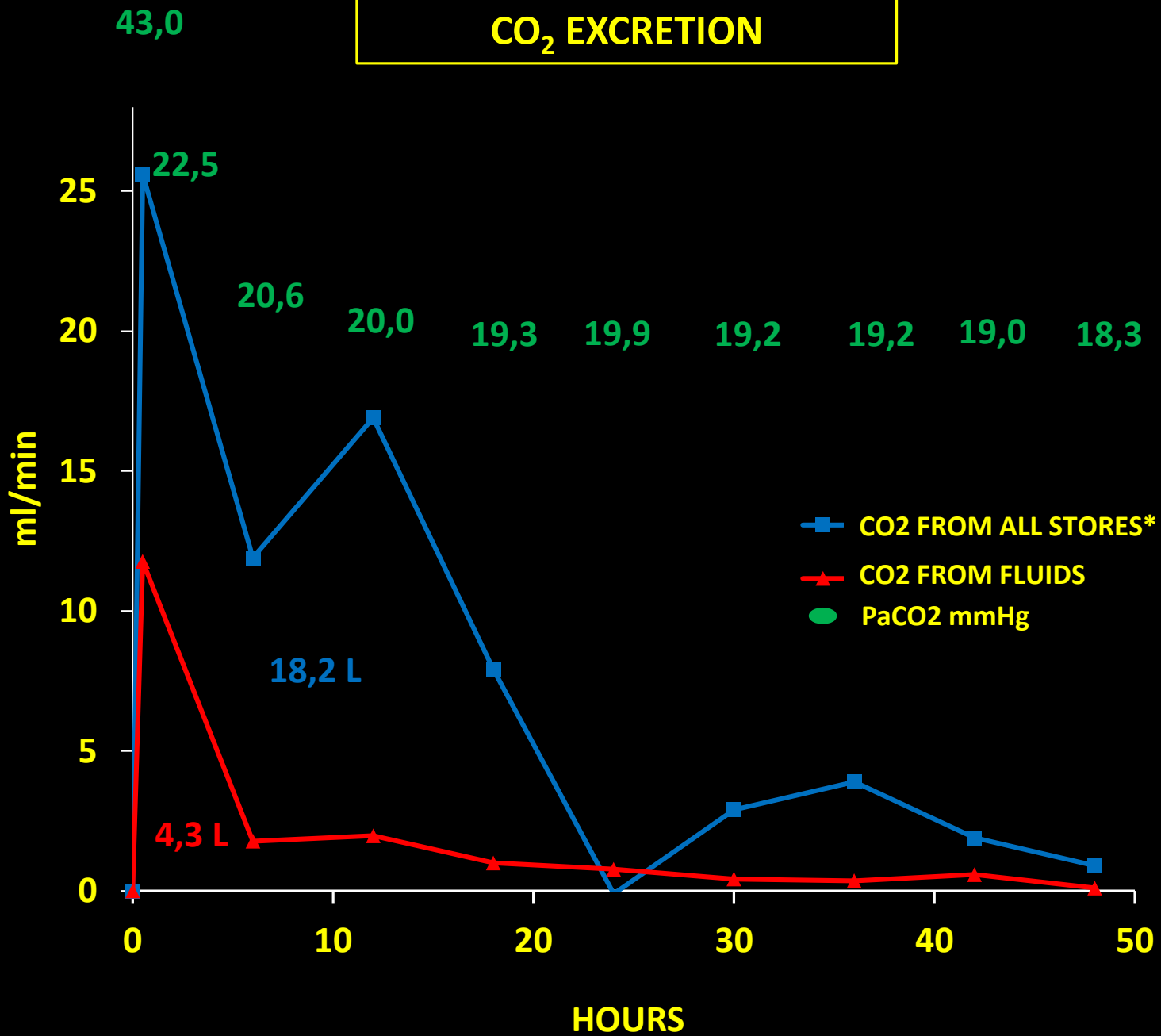
## Time course



# TOTAL CO2 CONTENT IN BODY FLUIDS ( $\Delta PCO_2$ : 43-20)



# CO<sub>2</sub> EXCRETION



\*(vco2-vco2 bas)-(vo2-vo2 bas)

## 37 PATIENTS ECCO2R

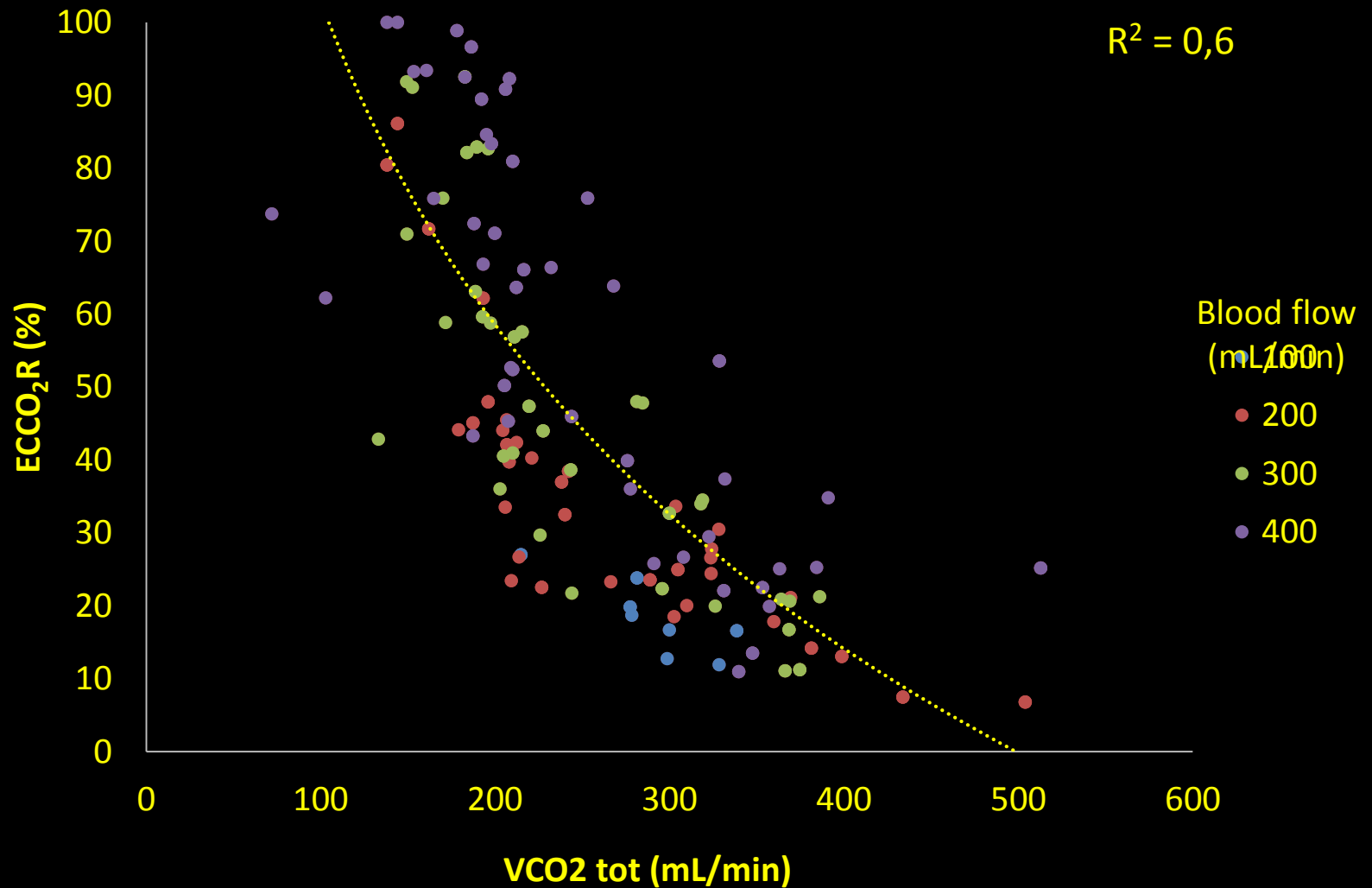
**R= 1,32 (252 measurements)**

Intermittent CO<sub>2</sub> dialysis  
in COPD?

# Minimally invasive ECCO<sub>2</sub>R

n = 8 pigs

R<sup>2</sup> = 0,6



# KINETIK DER CO<sub>2</sub>-RESERVEN DES KÖRPERS: 12 PIGS

