

DID
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KNOW?

Dräger

CO₂ PRODUCTION (VCO₂)



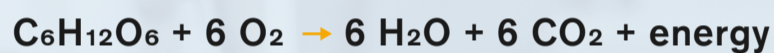
What is it?

The CO₂ concentration and the flow measurements can be combined to gain useful information about ventilation metabolism and nutrition.

VCO₂ is a parameter representing the energy consumption of the patient.

How is it measured?

Cells need energy and this energy is taken from food and O₂. The most simple form of metabolism is the oxidation (combustion) of carbohydrates such as glucose:

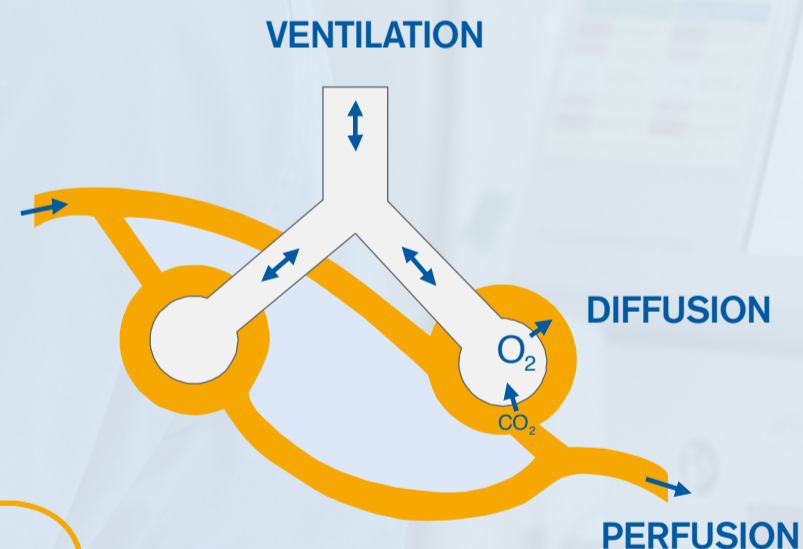


The CO₂ which is produced diffuses out of the cells into the blood and is exhaled via the lungs. Using CO₂ monitoring and flow sensor together, it is possible to calculate the production of CO₂ (VCO₂)



Why is it relevant?

Our body's physical capabilities change proportionately to changes in our metabolism. Hence the maximum oxygen uptake VO₂ at the end of strenuous work represents a criterion for and measure of the body's functional capacity. If on the other hand we want to assess the effects of physical exertion on a patient, the energy consumption (represented by VCO₂) should be measured during the course of the activity.



Why is it helpful to improve outcome?

VCO₂ is a measure of physical stress on a patient.

- VCO₂ provides rapid diagnostic information on ventilation, perfusion and metabolism.
- VCO₂ at a normal respiratory quotient (0.8) is an indicator of O₂ consumption.
- A 70 kg adult produces 250 CO₂ ml/min



Example

When in shock, the patient's energy consumption drops to below normal levels. The blood supply to peripheral regions of the body is inadequate and an oxygen deficit can be observed.

If the blood circulation increases again once the shock condition has receded, the energy consumption will also rise. Monitoring energy consumption thus permits an assessment of the state of shock.

Other reasons for an increase in CO₂ production could include hyperthermia, pain, increased muscle tone or the wake-up phase.