**Known Inputs**
Cardiac Output ($CO_n$)
Oxygen Consumption ($VO_2$)
Ventilator Data

Vary $FiO_2$ twice and measure $SaO_2$ for PEEP$_n$

**Known Outputs**
Shunt$_n$
$R_n$

Vary $FiO_2$ twice and measure $SaO_2$ for PEEP$_{n+1}$

Estimate Shunt$_{n+1}$ & hold $R$ constant ($R_{n+1} = R_n$)

Fit measured $SaO_2$ for PEEP$_{n+1}$ estimated Shunt$_{n+1}$

Estimate $CO_{n+1}$ based on fitted curve and estimated Shunt$_{n+1}$

**Known Outputs**
$CO_{n+1}$

**Lung Mechanics**
Estimate % decrease in shunt based on recruitment increase due to PEEP

Iterate over time if re-calibration is needed