Using the toolbox physio

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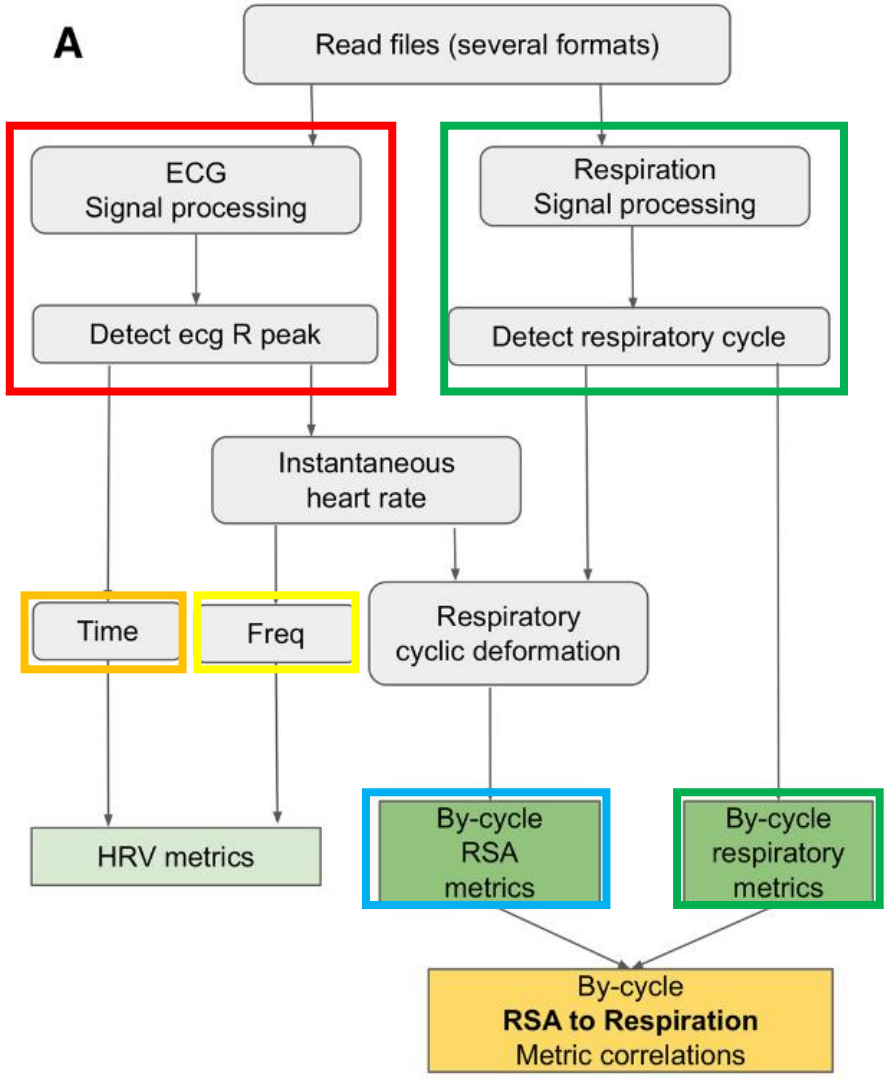
Ressources

- Github
  - https://github.com/samuelgarcia/physio
- Article (to cite)
  - https://www.eneuro.org/content/10/10/ENEURO.0197-23.2023
- Doc
  - https://physio.readthedocs.io/en/latest/

Main functions

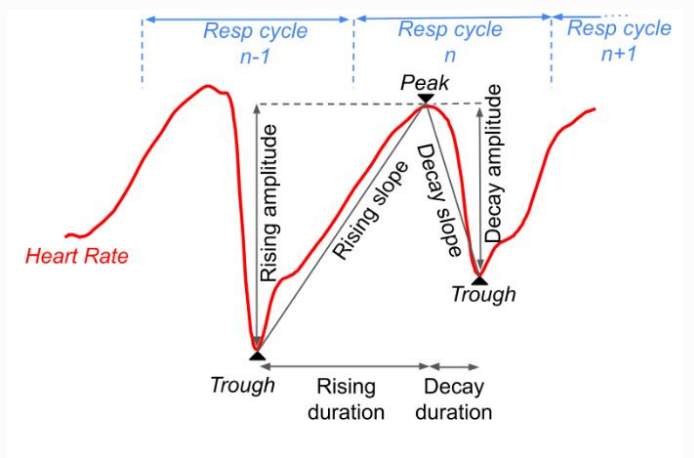
- ECG
  - Detect R peaks = physio.compute_ecg()
  - Compute time domain metrics = physio.compute_ecg_metrics()
  - Compute freq domain metrics = physio.compute_hrv_psd()
- Respi
  - Detect cycles and compute cycle by cycle metrics = physio.compute_respiration()
- RespHRV
  - Compute cycle by cycle metrics of RespHRV = physio.compute_resphrv()



Strengths of physio

- Like others toolbox, physio …
  - Detect R peaks of ECG and compute time and frequency domain metrics of HRV
  - Compute cycle by cycle respiratory detections and features

- Unlike others toolbox, physio …
  - Can be easily set by a **preset of parameters**
    - Allowing processing different species and sensor types
  - This preset of parameters can be easily **adjusted by the user**
    - Breaking with a « utopia » way of developing tools
  - Compute **cycle by cycle RespHRV**
  - Has a nice documentation dealing with both theoretical and practical aspects



Let’s practice

- Go there : https://github.com/ValentinGhibaudo/Formation_2025_physio_cardio_respi

- And follow instructions …