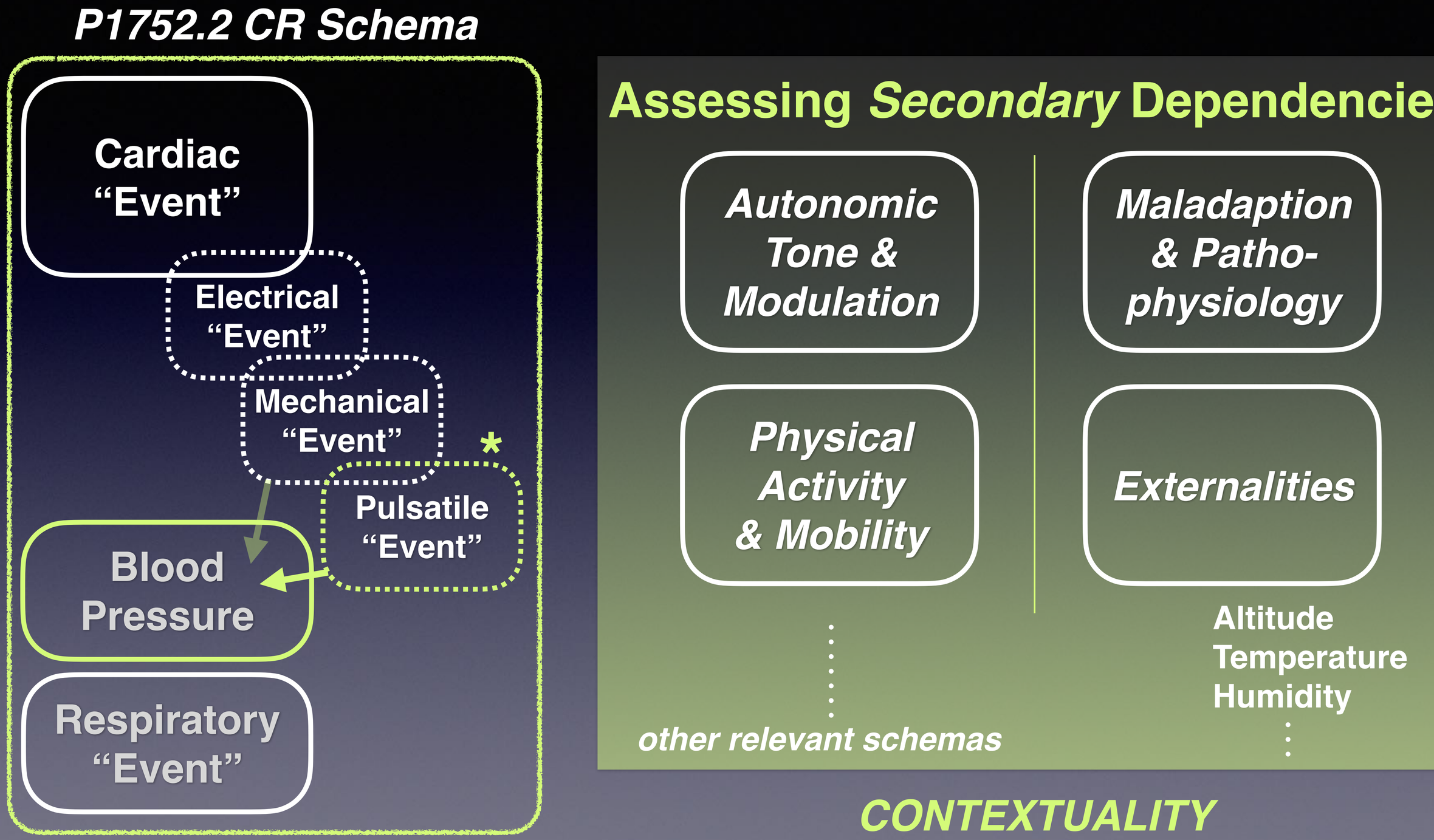
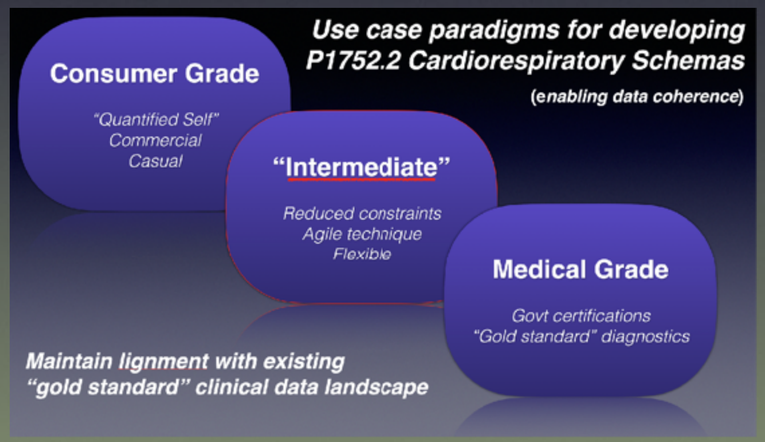
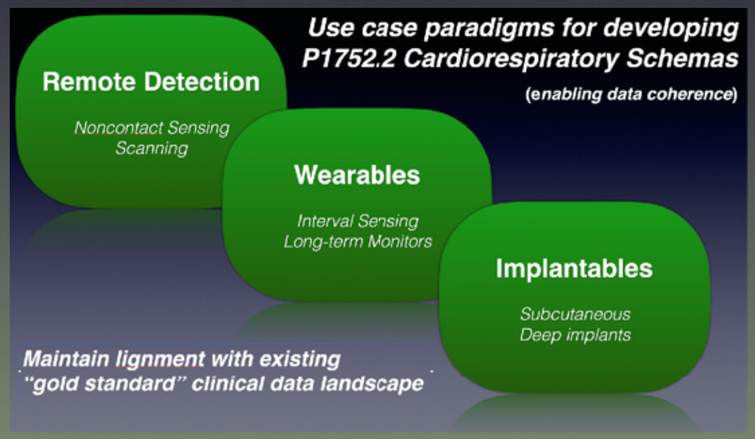

P1752.2 CR Schema
Cardiac "Event"
Electrical "Event"
Mechanical "Event"
*
Pulsatile "Event"
Blood Pressure
Respiratory "Event"
Assessing Secondary Dependencies
Autonomic Tone & Modulation
Maladaption & Patho-physiology
Physical Activity & Mobility
Externalities
other relevant schemas
Altitude
Temperature
Humidity
CONTEXTUALITY

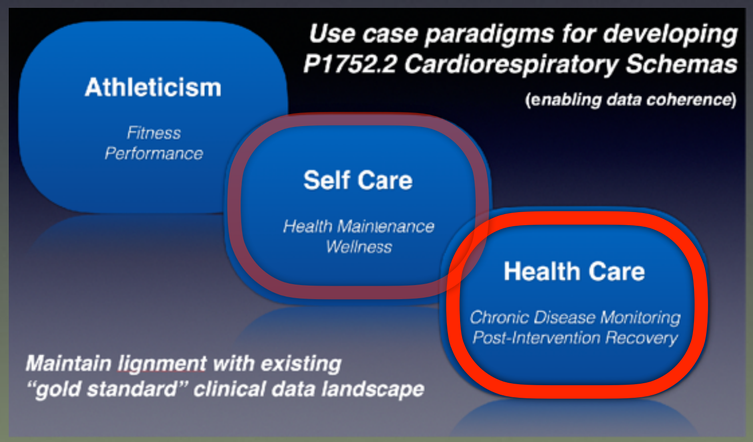
# P1752 Open mHealth Purpose:

- ***The purpose of this Working Group is to provide standard semantics to enable meaningful description, exchange, sharing, and use of mobile health data across a wide spectrum of use cases addressing consumer health, biomedical research, and clinical care needs. These standard semantics will be in the form of common data and metadata schemas…***

**Summary Addendum:** **Promotion of personalized healthcare**




**Present Trend:**
**Convergence of mobile health data with the digital biomarker space …**

→

**Current Need:**
**Accessing across all provinences for a targeted health data type (provinence specified in metadata)**

→

**Harmonization Ideal:**
**Enhancing relevance of data across *all use cases*, enabling contextualized continuous individualized care**

# OmH Cardiorespiratory Schema

## *Proposed Schema Structure*

*Cardiac Depolarization Events*

↓

### Pulse

↓

**Pulse Dynamics**

↓

*Rhythm*

### Blood Pressure

- ➡ *Systolic, diastolic*
- ➡ *Cardiodynamics*

### Respiratory

- ➡ *Ventilatiory dynamics*
- ➡ *Gas Exchange*
- ➡ *Anomalies*

# Respiratory Schema

## *Build - Initial Steps*

**Respiratory**

- ➡ ***Ventilatiory dynamics***
- ➡ ***Gas Exchange***
- ➡ ***Anomalies***

*Informed by "use cases" across paradigms*

**Dependencies?**

**Extensibility intent?**

*"Measure twice, cut once"*

**Atomicity**

**80/20 Rule**

**Modeling of Time**

*… and all the other schema design principals*

**Participants for Respiratory Schema Writing Subgroup ?**

# Cardiorespiratory Schema

## *Proposed Structure*

*Electrical Systoles*

### Pulse

Pulse Dynamics

*Rhythm*

### Blood Pressure

- *Systolic, diastolic*
- *Cardiodynamics*

### Respiratory

- *Ventilatiory dynamics*
- *Gas Exchange*
- *Anomalies*

# Blood Pressure Measurement : *Conventional*

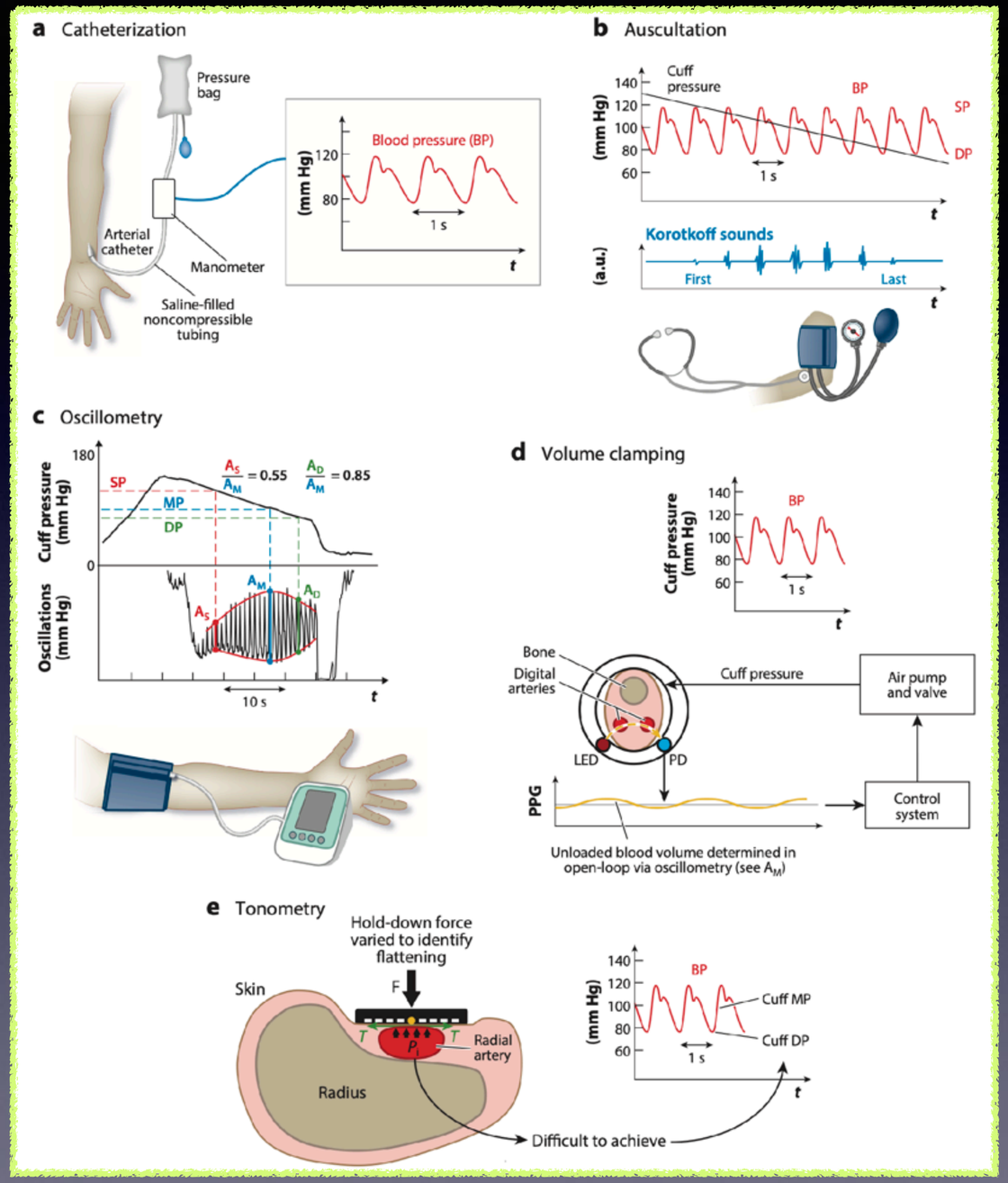
a) Intra-arterial (*direct*)

b) Auscultation **

c) Cuff Pressure w/ Oscillimetry **

d) Volume Clamping w/ Oscillimetry

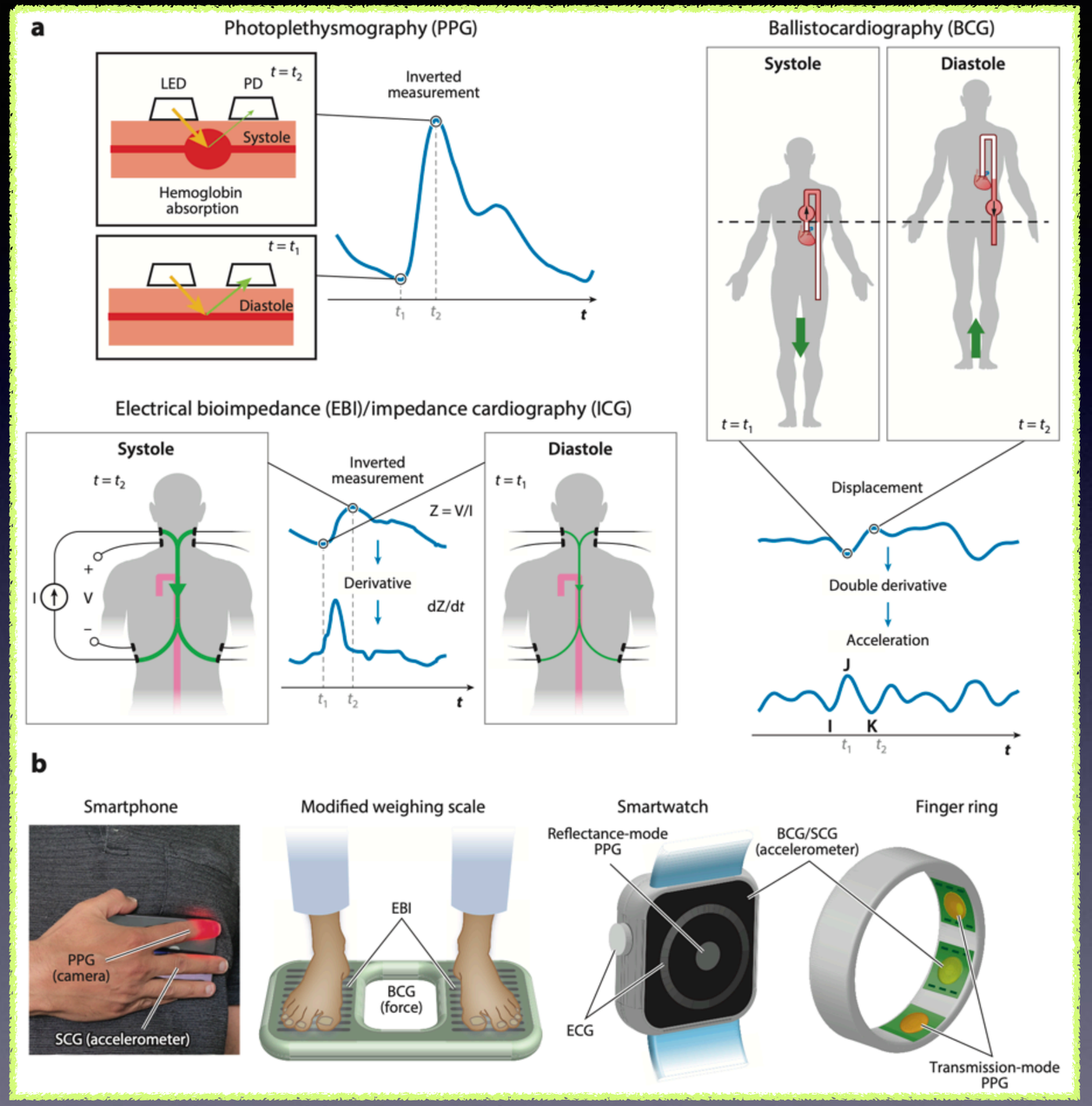
e) Tonometry




Mukkamala, R, Stergiou, GS, Avolio, AP; "Cuffless Blood Pressure Measurement"; Annu. Rev. Biomed. Eng. 2022. 24:203–30

# Blood Pressure Measurement : *Cuffless Methods*

- Photoplethysmography
- Ballistocardiography
- Seismocardiography
- Electrical bioimpedance/ impedance cardiography
- Ultrasound




Mukkamala, R, Stergiou, GS, Avolio, AP; "Cuffless Blood Pressure Measurement"; Annu. Rev. Biomed. Eng. 2022. 24:203–30

# Blood Pressure Measurement : *Cuffless Methods*

| Category | Method | Advantages | | Disadvantages | | Evidence |
|---|---|---|---|---|---|---|
| Calibrated | PTT | Continuous or passive<br>Seamless | Supporting theory | Periodic cuff calibrations or demo-graphics calibration | Two measurement sites | Many published studies<br>Regulatory-approved, cuff-calibrated, contact devices<br>Limited published data on intraindividual BP change tracking |
| | PWA (PPG) | | Single sensor | | Little theory | |
| | Facial video processing | | Ubiquitous device | | Little theory<br>Low waveform quality | |
| Uncalibrated | Cuffless oscillometry (finger pressing) | Calibration-free<br>Solid theory | Potentially ubiquitous device | User activity | | Few published studies |
| | Ultrasound (area-blood velocity) | | Central PP measurement | Difficult probe placement | | |
| | Volume control | | Continuous | Disruptive (finger numbness) | | |

Mukkamala, R, Stergiou, GS, Avolio, AP; “Cuffless Blood Pressure Measurement”; Annu. Rev. Biomed. Eng. 2022. 24:203–30