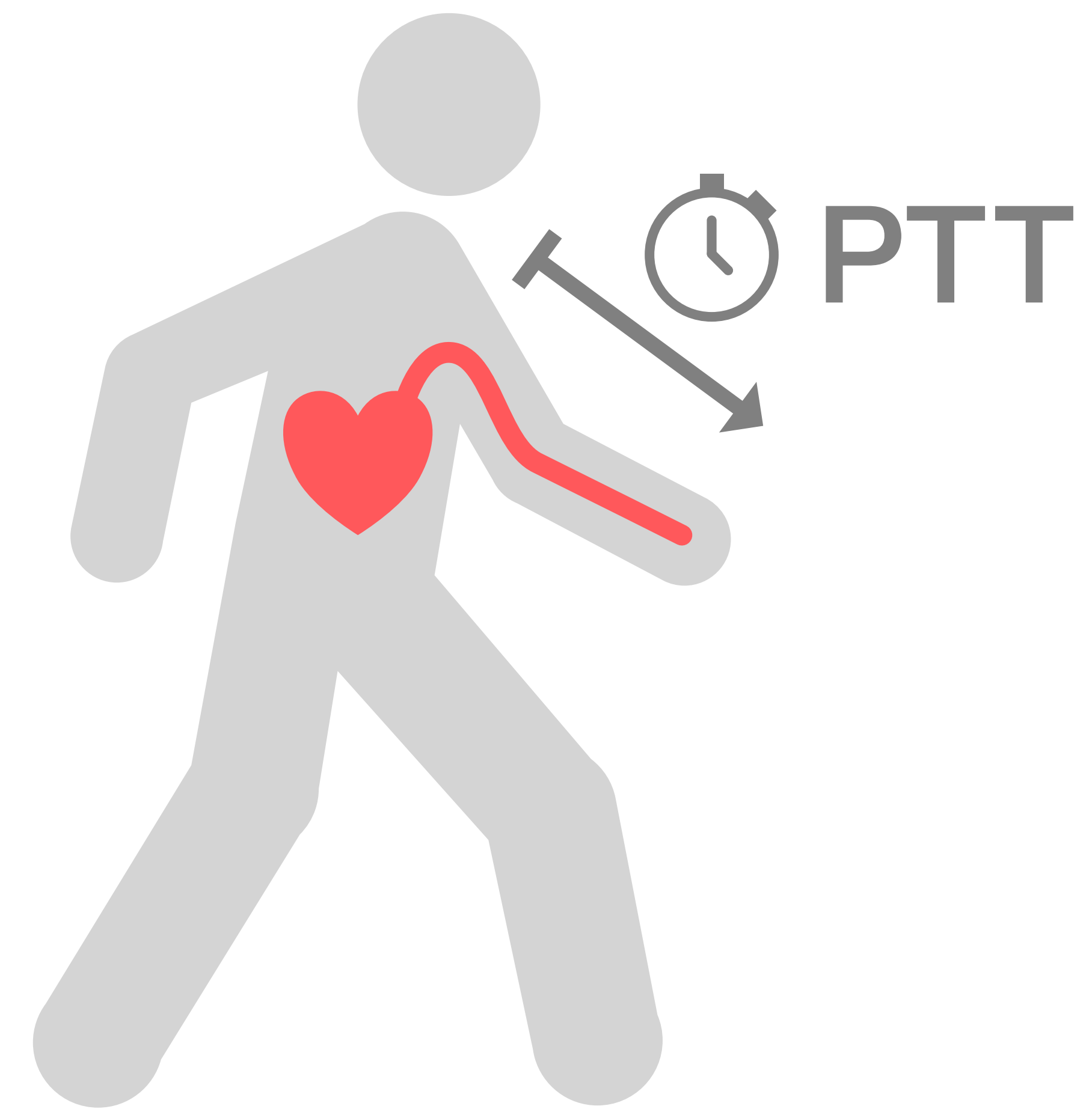


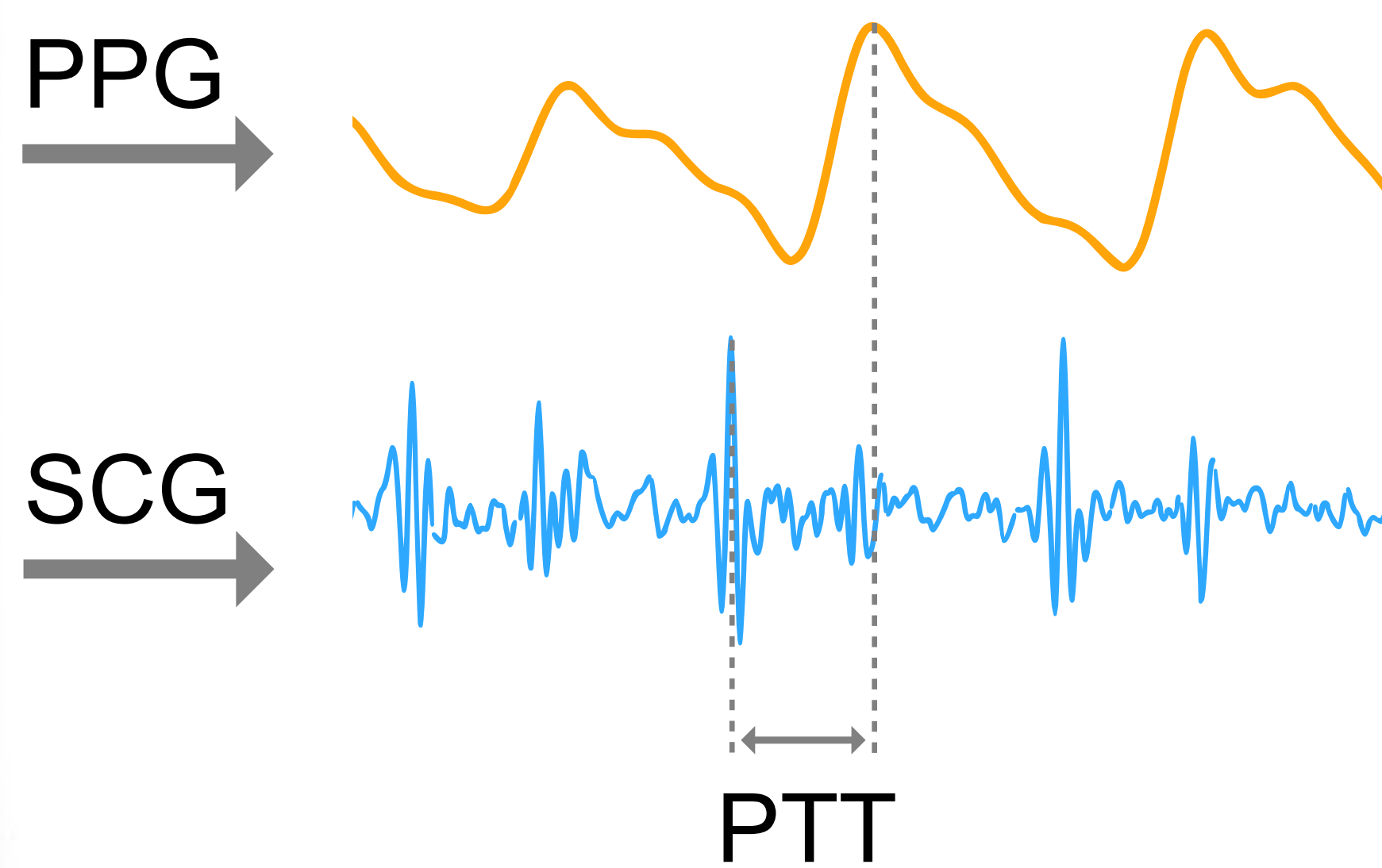
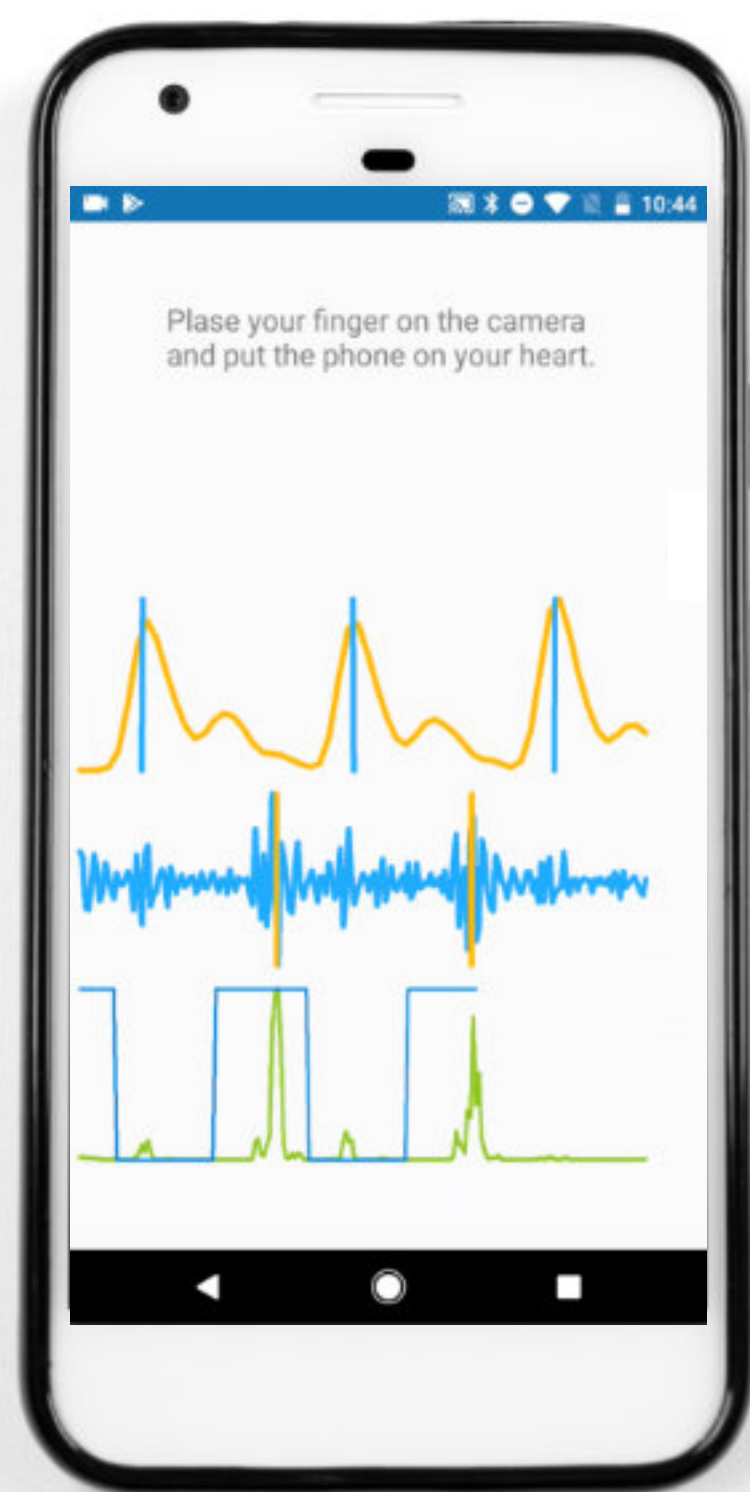
# SEISMO

## Mobile Blood Pressure Monitoring Using Built-in Smartphone Hardware

Pulse transit time (PTT) is the time taken for a blood pulse wave to travel from the heart to the fingertip. PTT is inversely proportional to blood pressure (BP), making PTT an attractive alternative to traditional cuff monitors for continuous, noninvasive, and rapid BP sensing.

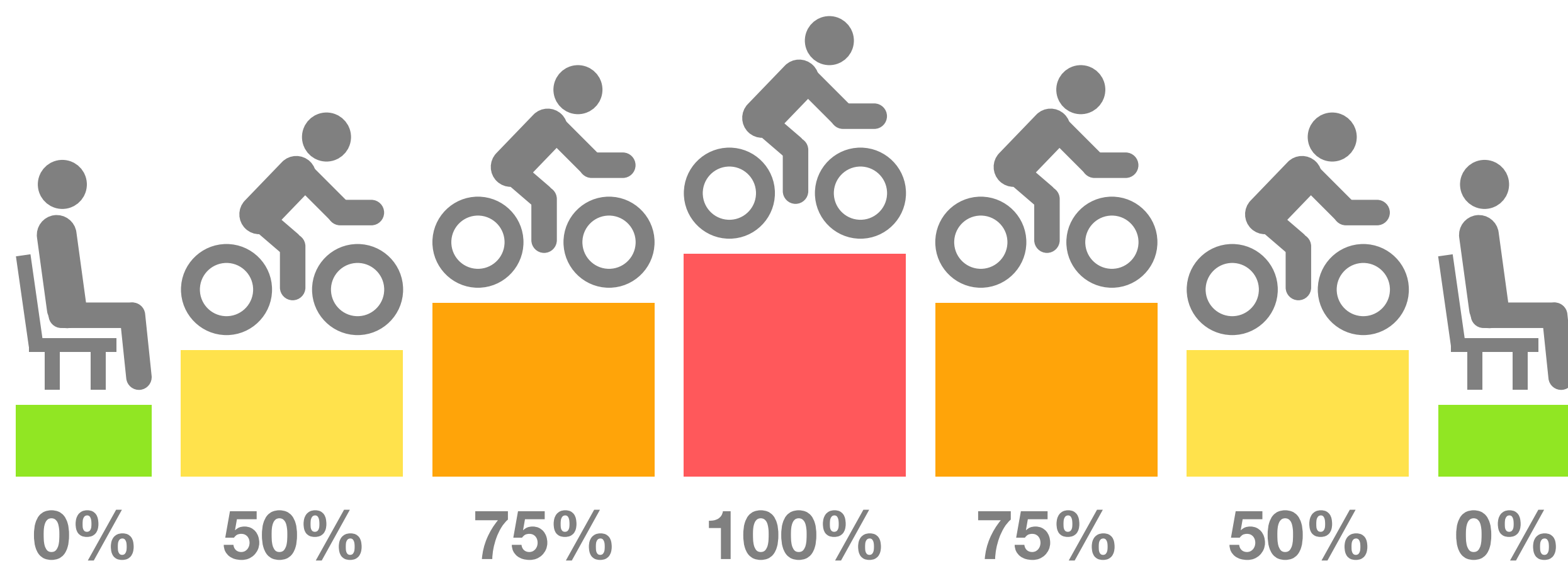


$$BP \propto \frac{1}{PTT}$$

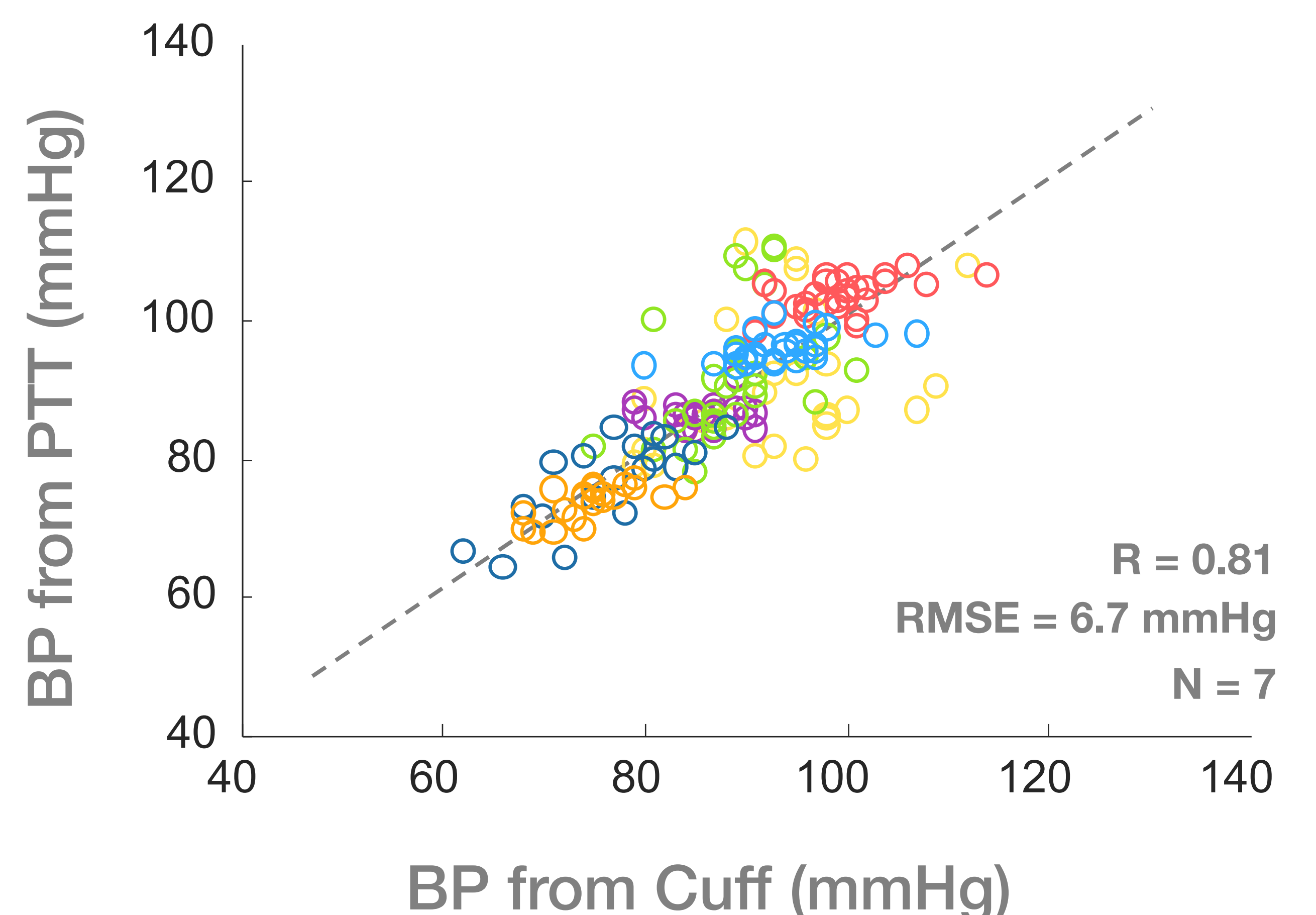


Seismo measures PTT by recording a fingertip photoplethysmogram (PPG) from the camera and sensing the thoracic seismocardiogram (SCG) with the accelerometer. The PTT is calculated from PPG and SCG peak deltas. The PPG, SCG, and PTT are displayed in real time.

To evaluate Seismo, participants performed graduated exercise activities. BP was measured after each activity both with a standard home blood pressure cuff and with Seismo. Data from the first day was used to calibrate each user's linear BP-PTT model. Data from three remaining days were used for evaluation.



### Evaluation Results



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