

Rim-to-Rim Wearables At The Canyon for Health (R2R WATCH)

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Project Objectives

1. Markers for Health:

Identify physiological, cognitive markers most related to health and task performance

2. Data Processing:

Determine key methodologies for data processing from GOTS/COTS devices

3. BSVE Integration:

Integrate data into the Biosurveillance Ecosystem (BSVE)

Grand Canyon Rim-2-Rim Hike

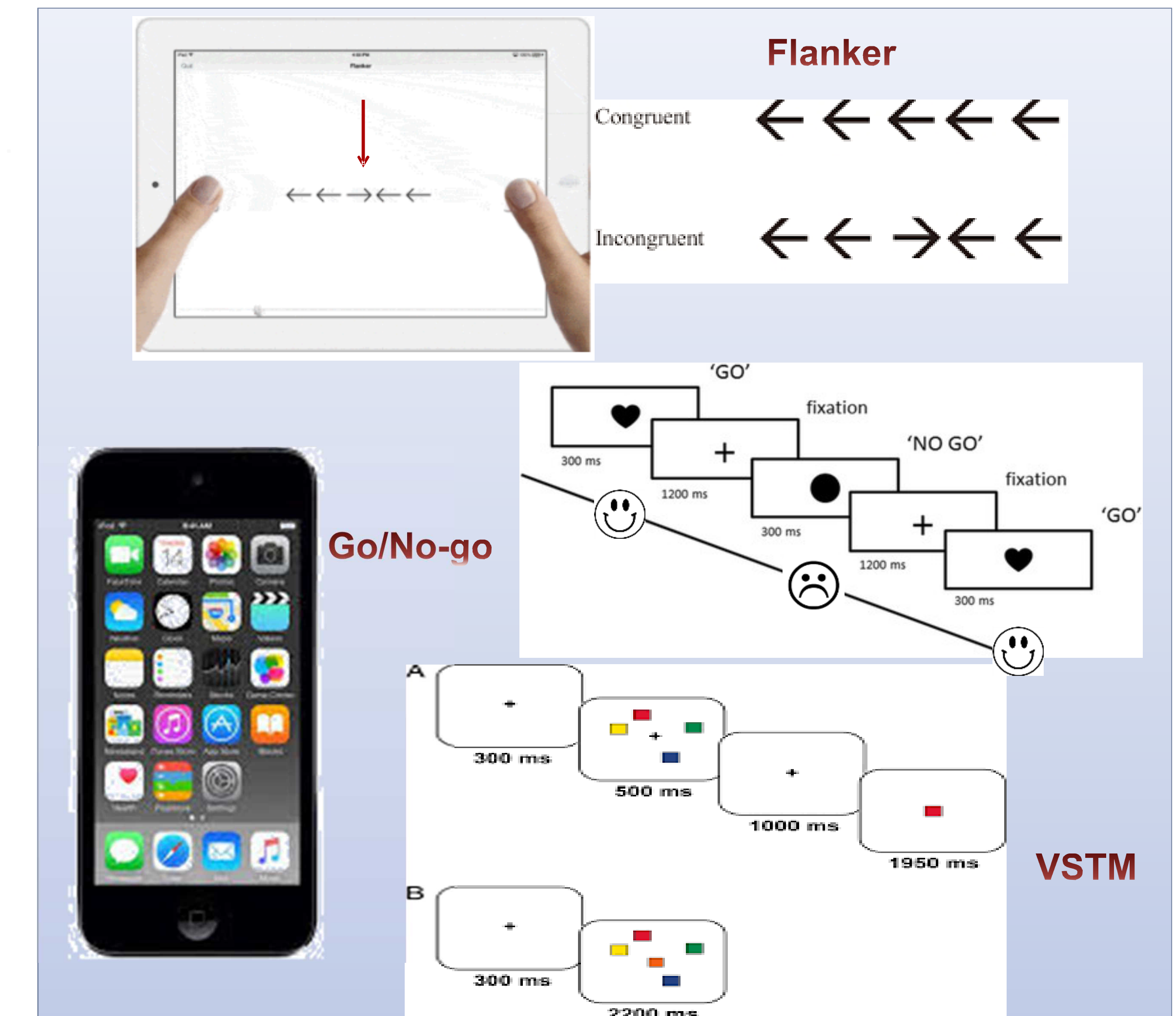
- Altitude and temperature change
- Extreme environment
- Physical strain
- 14.3 miles, 6,000 feet to the bottom
- 9.6 miles, 4,500 feet back to the South Rim

Mobile Devices for Physiological Data

Package	Cognitive Tests	GPS	Elevation	Heart rate (ECG)	Heart rate (Wrist)	Heart rate (Forehead)	Cadence (Torso)	Cadence (Ambient)	Temperature (Ambient)	Temperature (Direct Sun)	Temperature (Skin)	Humidity	Total	Qty
Advanced 1	iPod Touch 6	Fenix 3 HR	Fenix 3 HR	Wahoo TickrX	Fenix 3 HR	LifeBeam SmartHat	Fenix 3 HR	Wahoo TickrX	SensorPush	SensorPush	Tempe	SensorPush	\$1,115	10
Advanced 2	iPod Touch 6	Spartan Ultra	Spartan Ultra	Smart Sensor	(None)	LifeBeam SmartHat	Spartan Ultra	(None)	SensorPush	SensorPush	(None)	SensorPush	\$1,165	10
Basic 1	iPod Touch 6	Vivoactive HR	Vivoactive HR	(None)	Vivoactive HR	(None)	(None)	(None)	SensorPush	(None)	(None)	SensorPush	\$515	35
Basic 2	iPod Touch 6	eTrex 10+ 2AA	(None - 'floors')	(None)	Fitbit Charge HR	(None)	Fitbit Charge HR	(None)	SensorPush	(None)	(None)	SensorPush	\$485	15

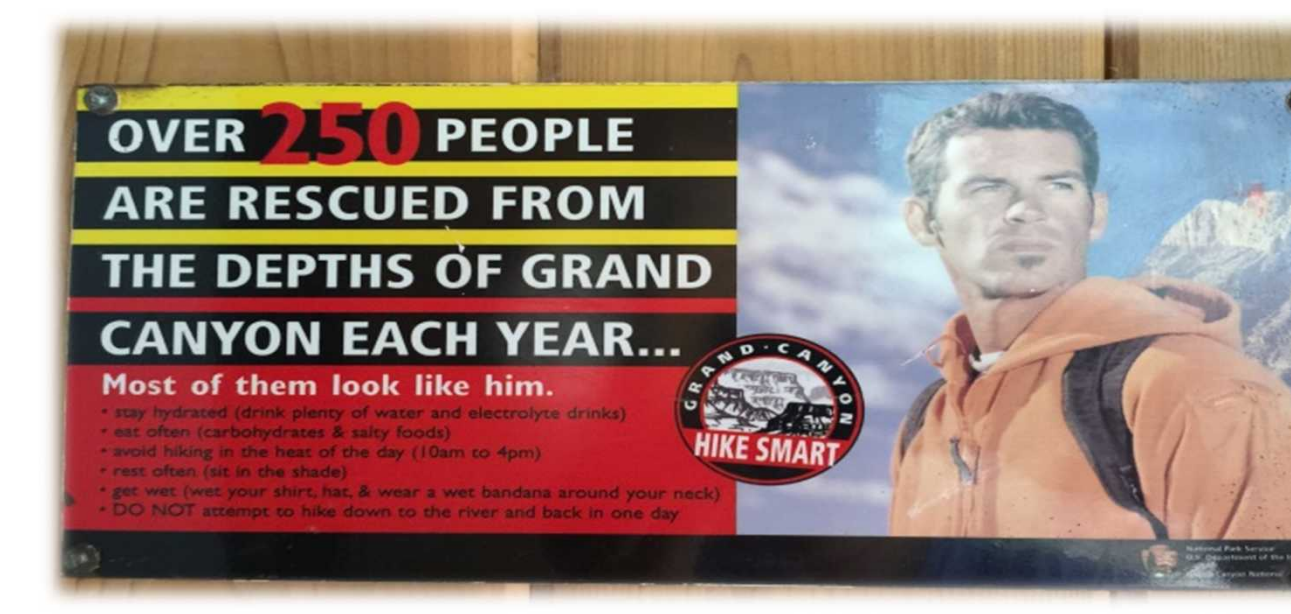
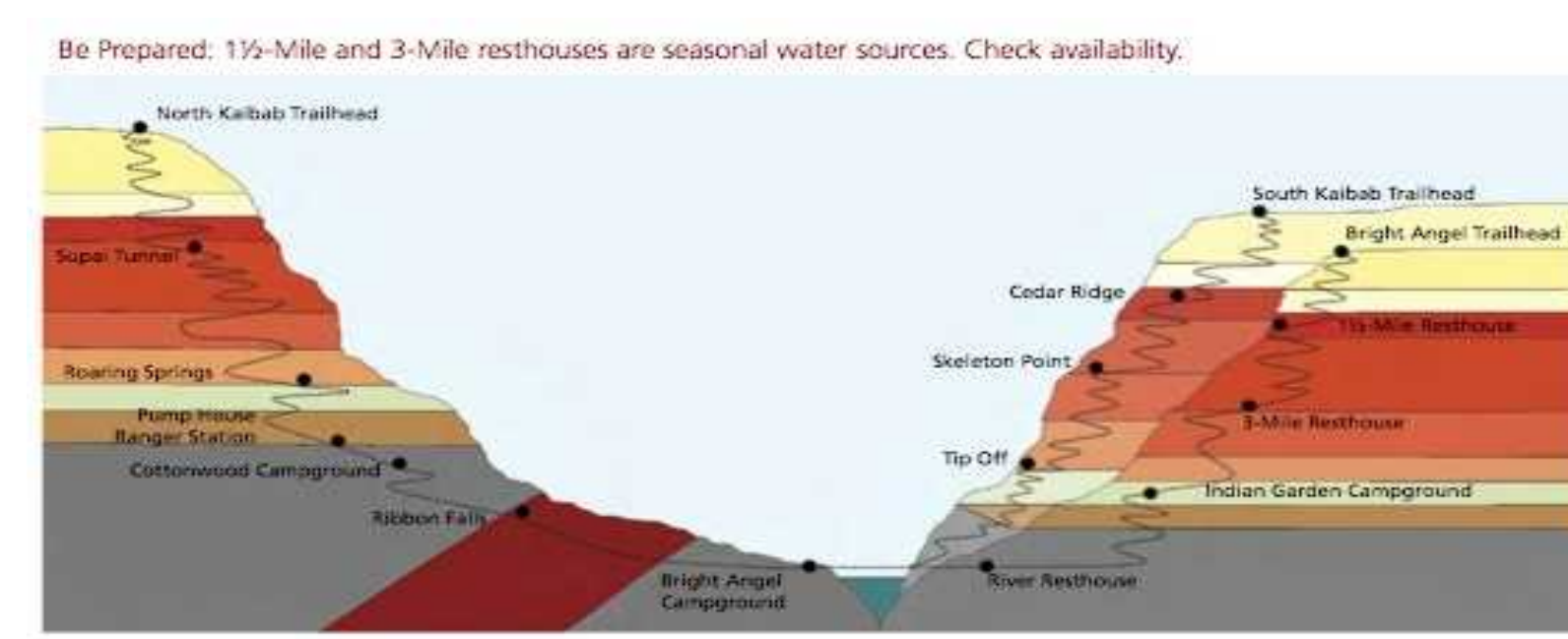


Measuring Cognitive Ability

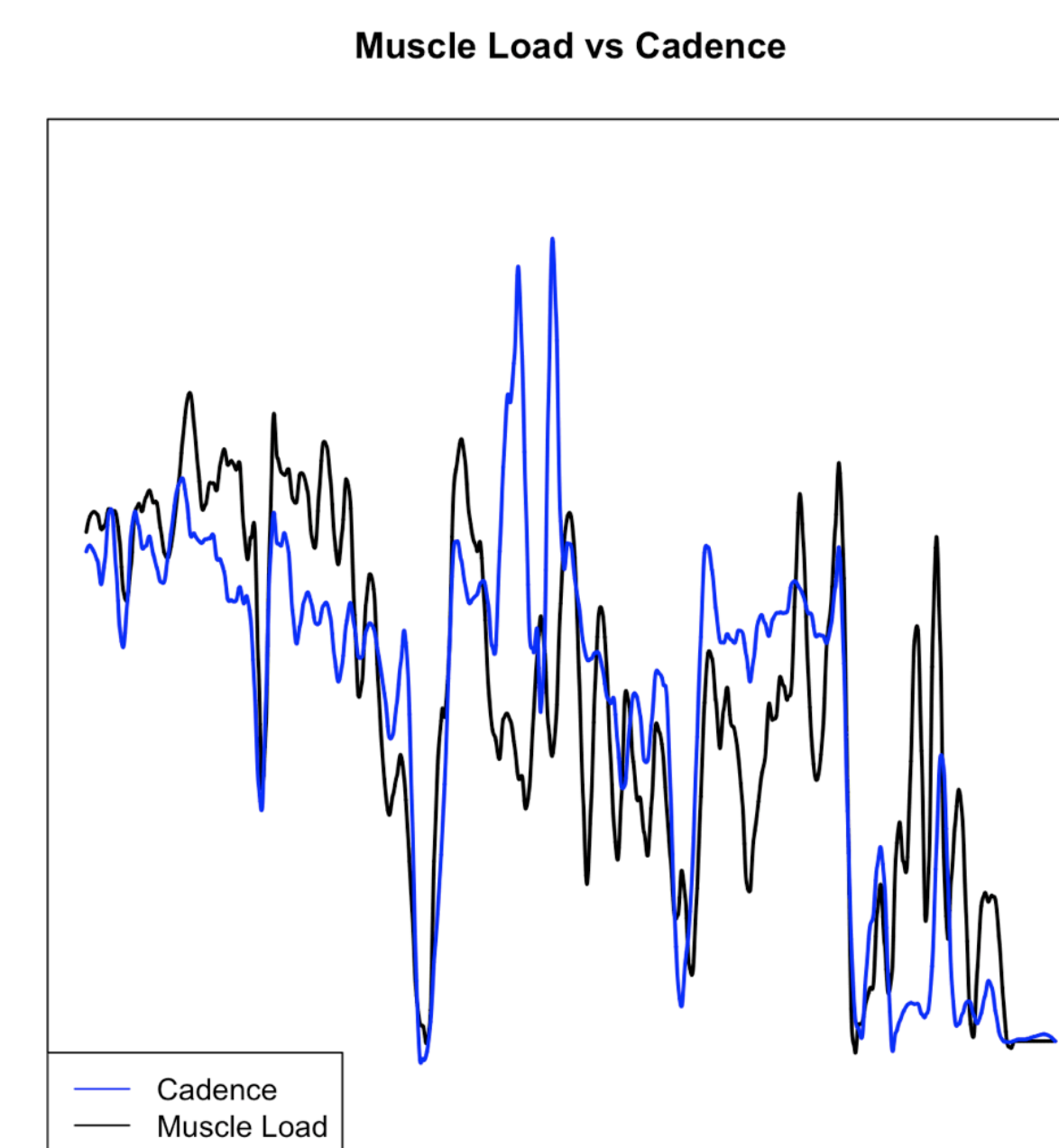
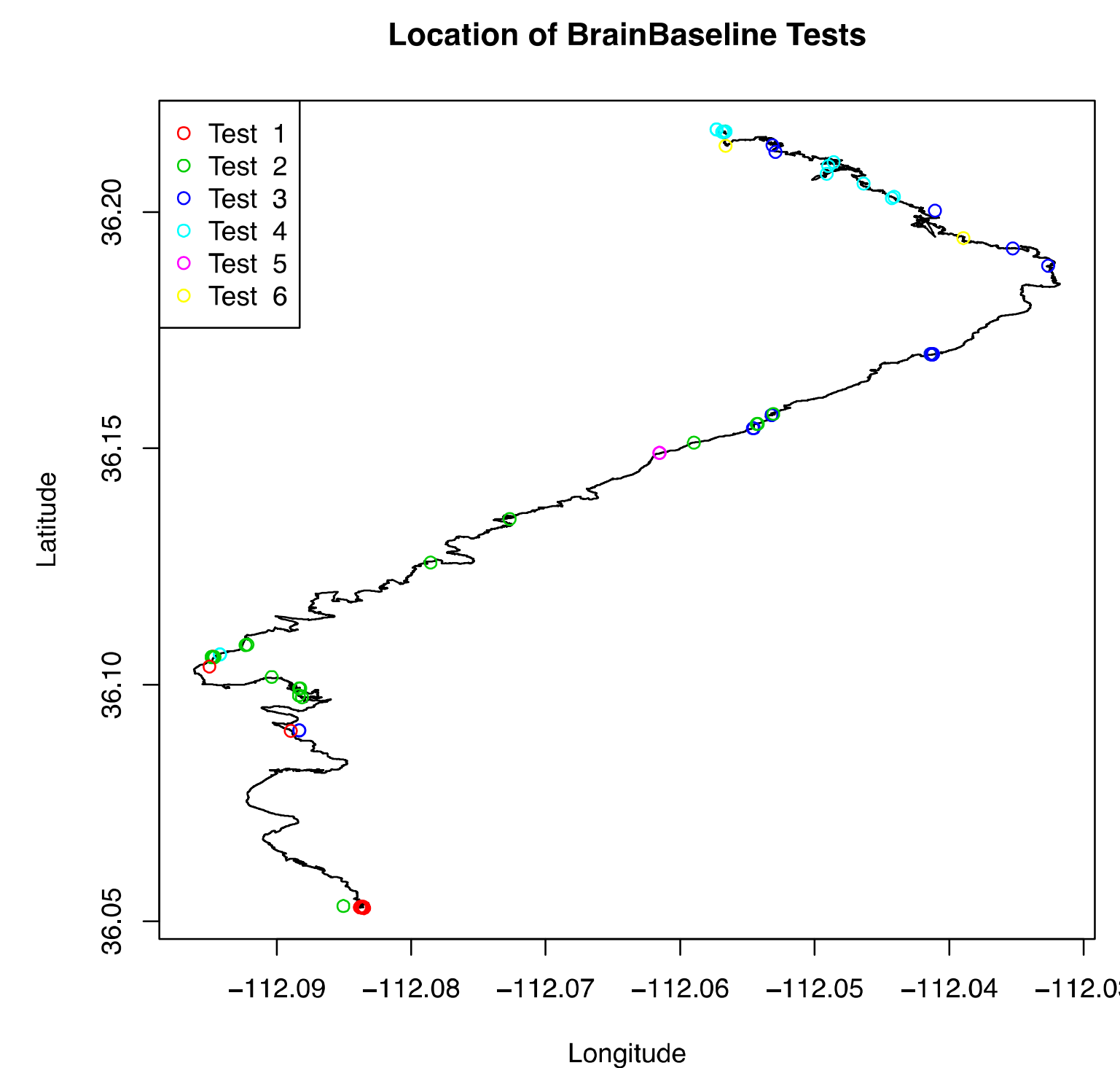
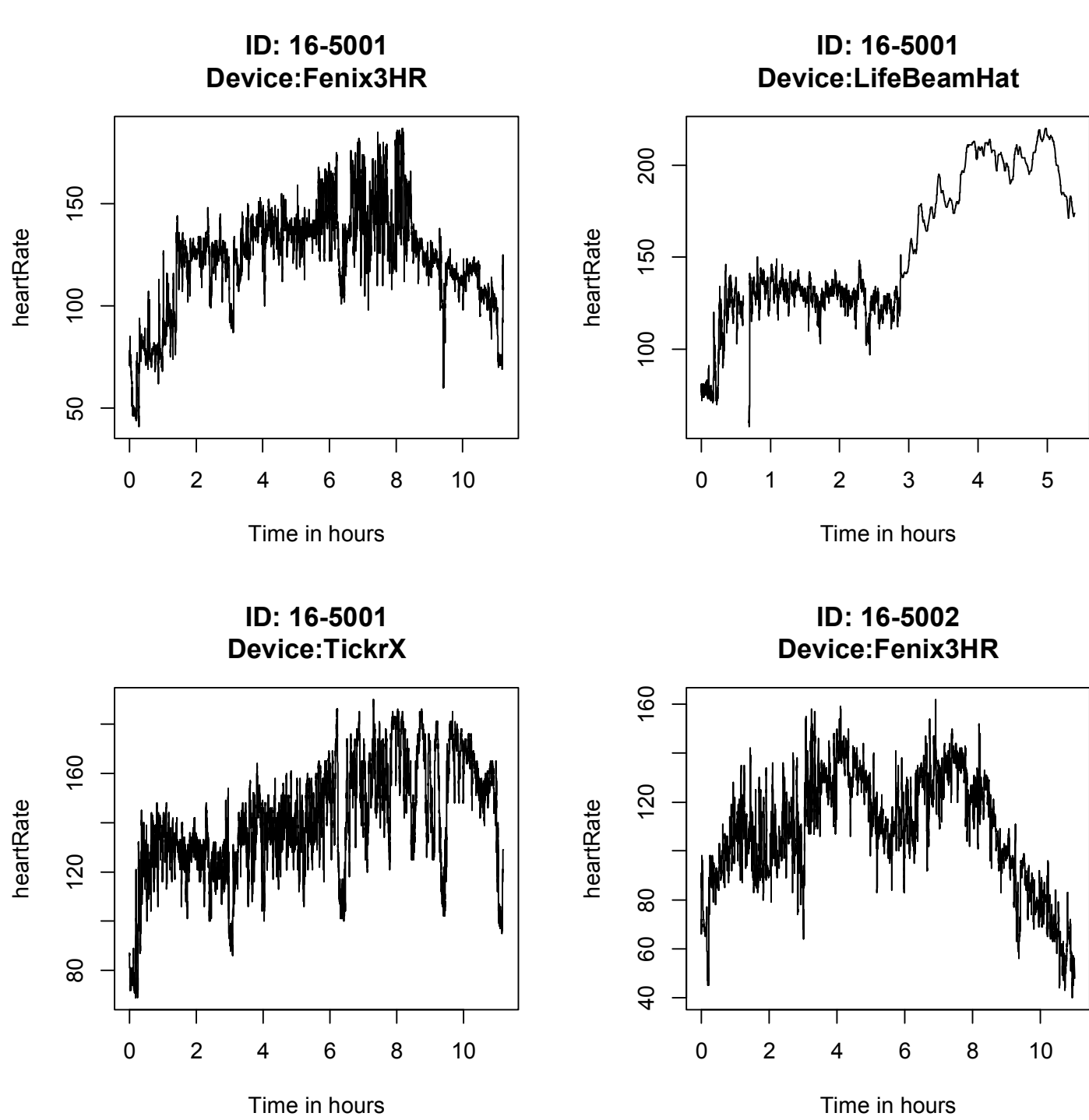


Brain Baseline

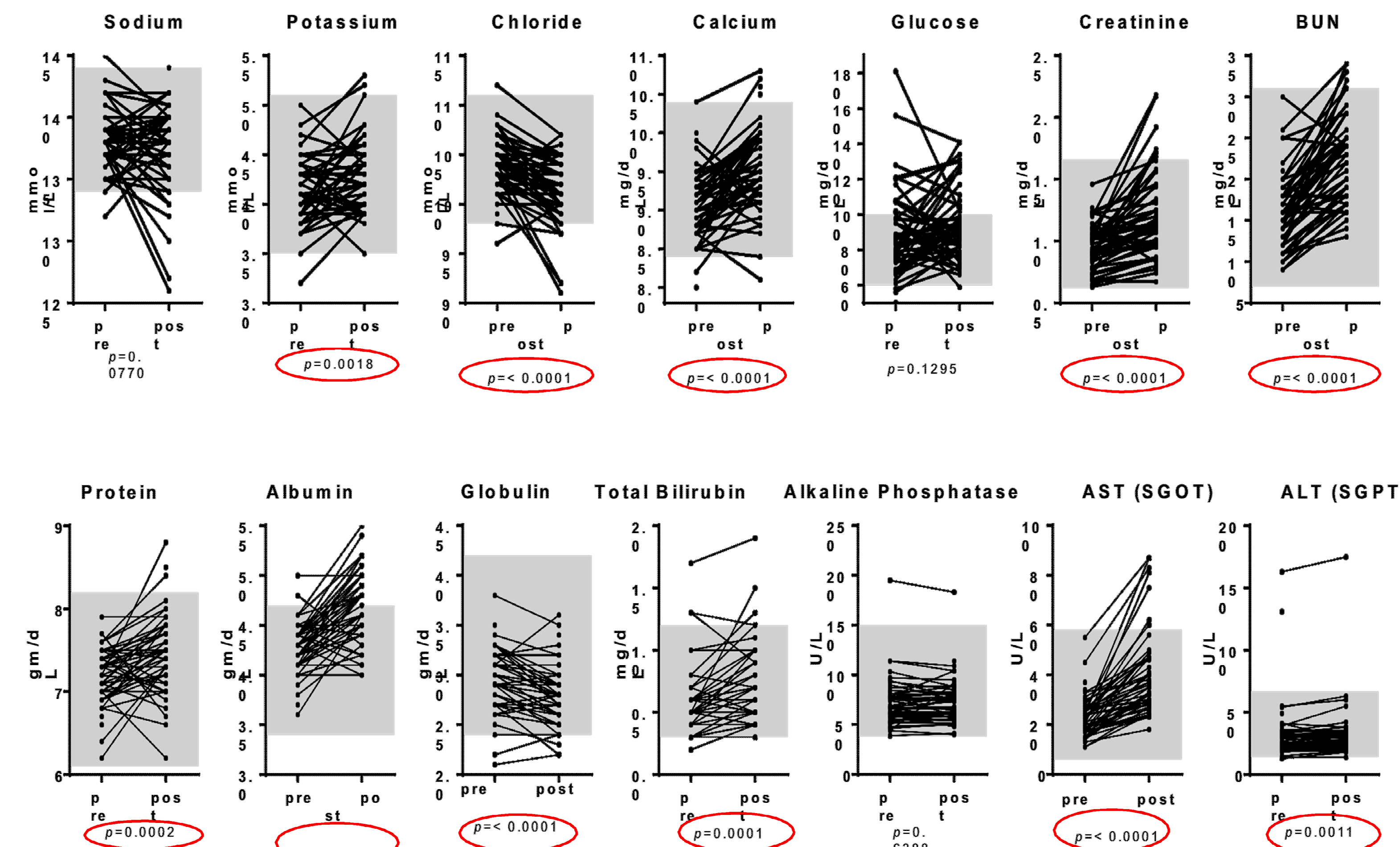
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afibm	N-Back
Go/No-Go	Go/No-Go
Posner Cueing	Posner Cueing
Speed	Speed
Spatial Working Memory	Spatial Working Memory
GREEN	Stroop
7/ HGH	Task Switching
Trails A & B	Trails A & B
Visual Search	Visual Search
Visual Short-Term Memory	Visual Short-Term Memory



Mobile Device Data Samples



Metabolic Panel (before and after)



Effects on Cognitive Scores

