Deploying a Physiological Status Monitor

FIREFIGHTER PHYSIOLOGICAL MONITORING
TECHNOLOGY SUMMIT
March 28–30, 2018
Washington, DC

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Goals of Monitoring

Environmental

- Danger
- PPE decision
- Exposures (gases, particulates)

Location

- Lost firefighter
- Training

2007 AFG Project – Skidmore/Globe

Field-Based Study

24 hours of monitoring – PSM
Wearable baselayer

CV strain

Alarm response
Firefighter activities
Recovery

DHS AFG EMW-2007-FP-02581

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What are We Interested In?

Periods of Interest

Alarm Response

Rehab

Recovery

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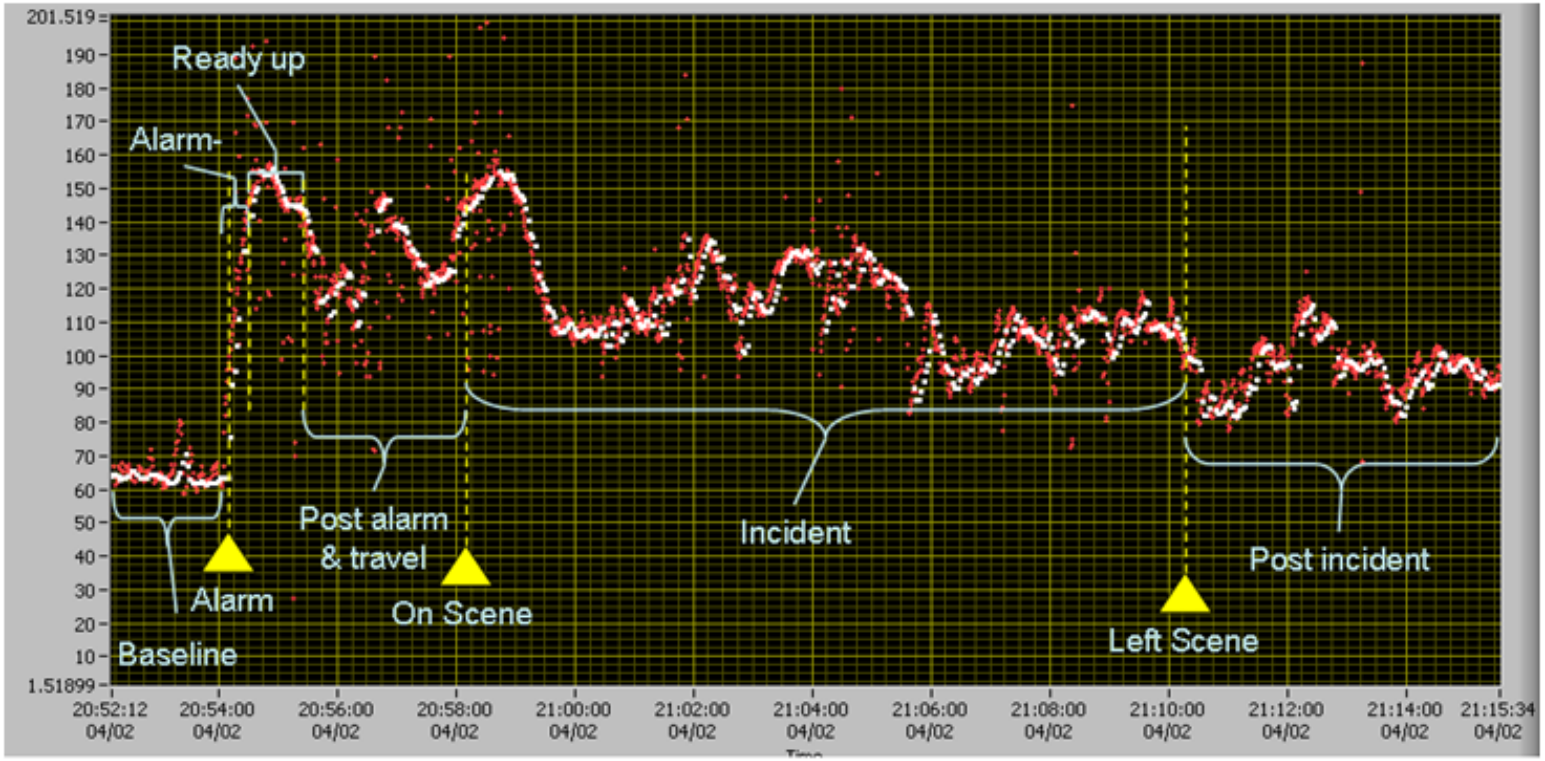
Heart Rate Response to an Alarm, Enroute, and During the Incident



Red: Instantaneous HR (IBI)
White: HR

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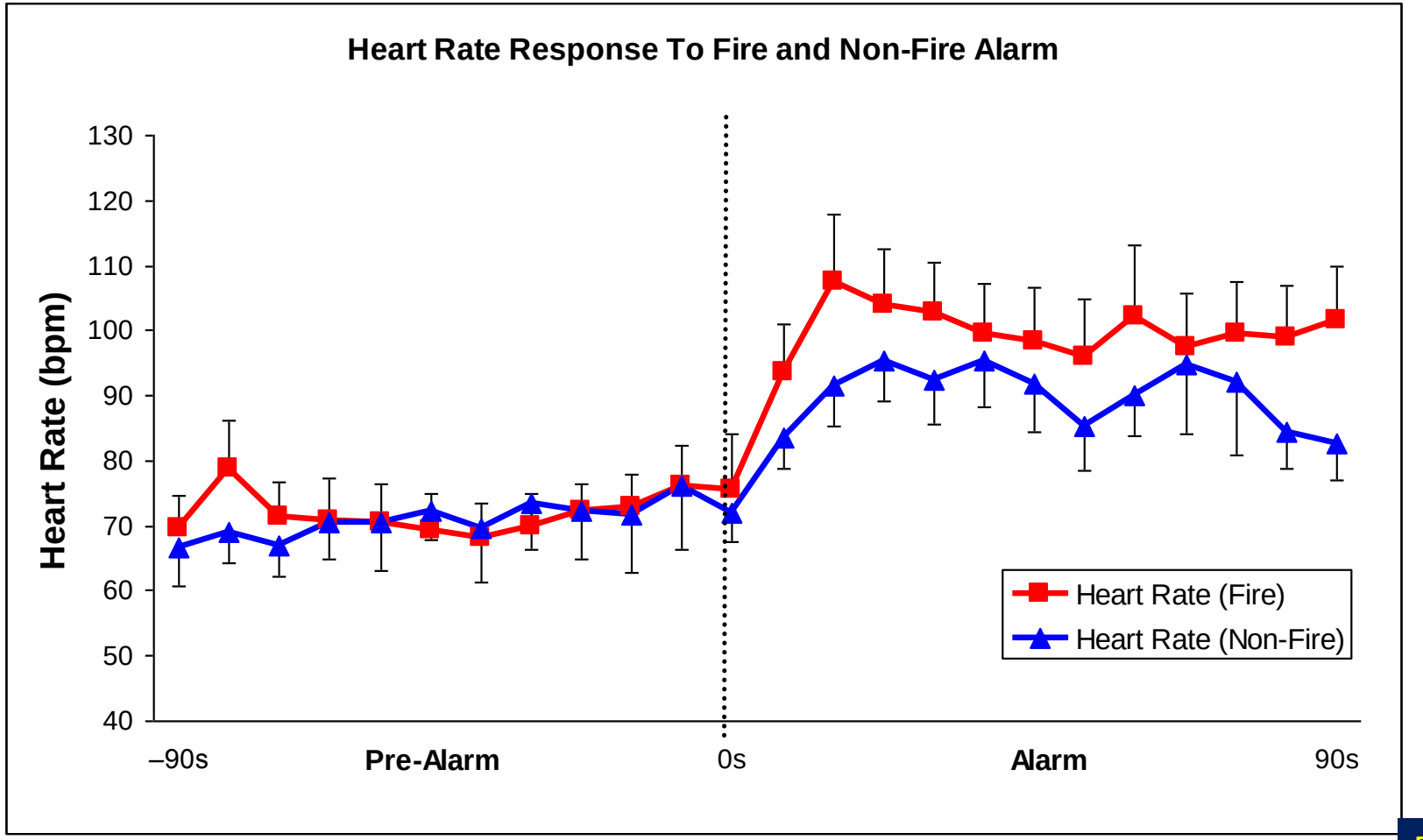
Heart Rate Responses to Fire and Non-Fire Alarms



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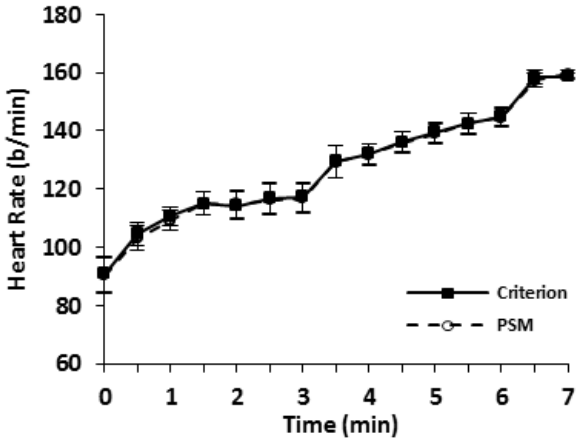
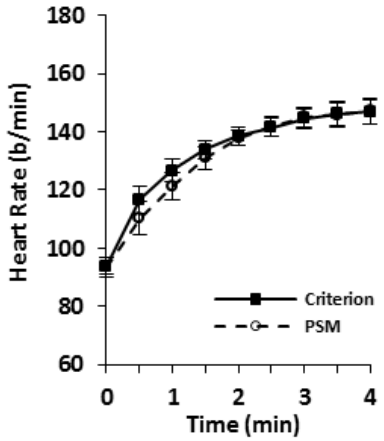
WASP – Validating Accuracy

HR validated against criterion measures

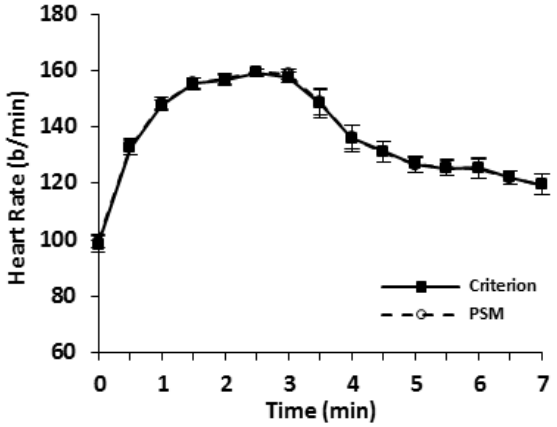
Walk



Search



Stair Ascent/Descent



Mean heart rate (± standard error) during different firefighting activities

Smith et al., J Occup Environ Health, 2014.

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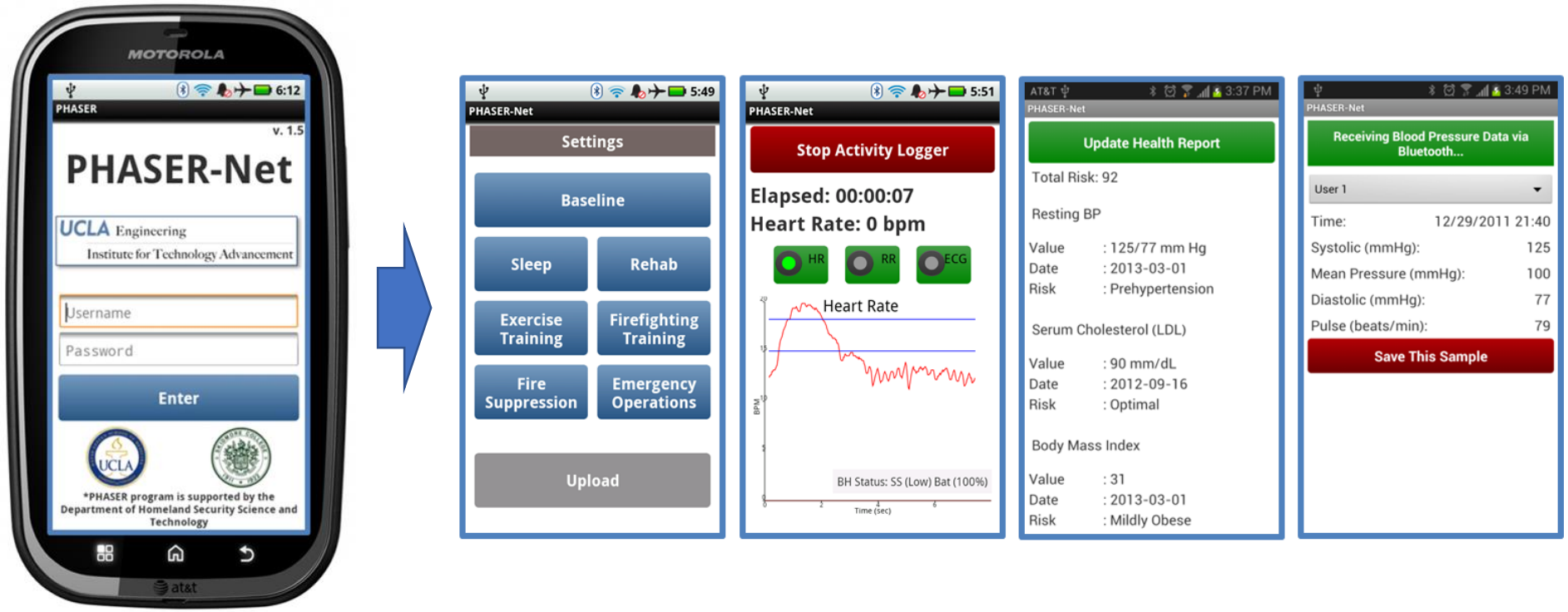
PHASER-Net: Android Application



Figures are photos of the PHASER-Net Android mobile application in action on a mobile device

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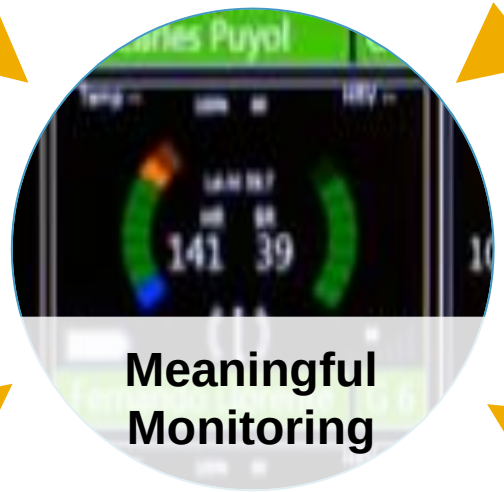
Challenges

- Matching physiological/medical info to technology
  - What we can do vs. What we need to make decisions
- Individual Variability
- Technological/Durability
- Practical (union, admin, privacy, liability)
- Making sense of data
  - Amount of data
  - Display
  - Prediction accuracy
- Interpretation (who, when)

Meaningful PSM

Physiology
Clinical

Fire
Service



Meaningful Monitoring

Technology
& Computing

Commercial
Partners

GLOBE BY MSA The Safety Company

Zephyr™ Measure Life...Anywhere

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