6 NeuroPulse: Preserving Neurological Function in Out-of-Hospital Cardiac Arrest

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Need

User and Problem

Out of Hospital Cardiac Arrest has a **67%** chance of **neurological damage. Remote Ischemic Conditioning** is theorized to prevent this through controlled blood flow restriction and reperfusion.

Objective

Design an RIC device for EMS to enable researchers to evaluate the efficacy of RIC in improving neurological outcomes post-OHCA.

Design Inputs

- **Portable Size and Lightweight**
- **Pressure Range 126-146 mmHg**
- **Active Life >40 min (1 cycle)**
- **Self-Contained Battery**

Testing Results

Test 1 – Pressure Generation

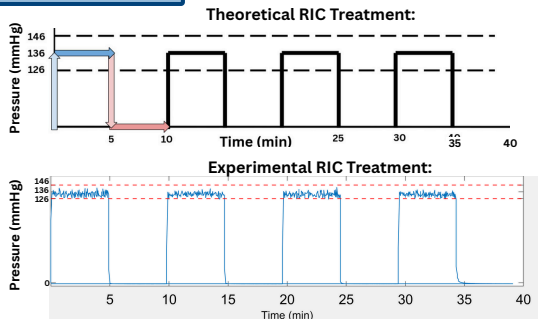
What: Validate pressure range.

How: **PASS** (136 +/- 10 mmHg)

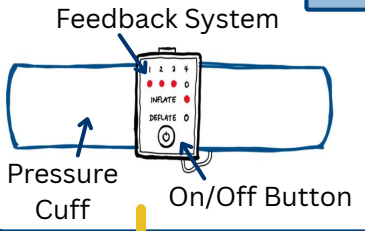
Test 2 - Active Life

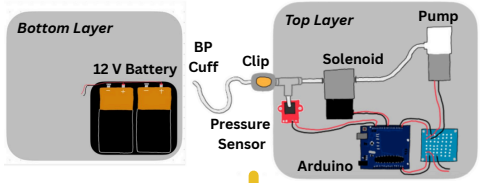
What: Evaluate battery life.

How: **PASS** (> 40 min)

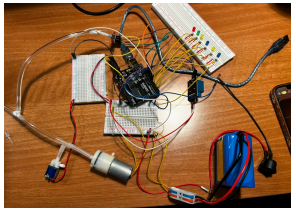


Solution-Design





Solution-Build



Demo VIdeo

Future Directions

Revisions

Increase robustness, mechanical failsafe, screen interface, data storage

Impact

Improve neurological outcomes & support RIC research.

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