**MISSION STATEMENT**

- **Objective:** To combat the low patient adherence to current respiratory therapy by creating a fun, game-based training device.

**Competitive Comparison**

<table>
<thead>
<tr>
<th>Product</th>
<th>Portable</th>
<th>Most Obstructive</th>
<th>Comfortable</th>
<th>Real-Time Monitoring</th>
<th>Incentive for Patient Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiro</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Traditional Spirometer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
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<tr>
<td>Incentive Spirometer</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Agency</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>

**GANTT CHART**

- **Spring Timeline:**
  - 4/2/2018: Medical Professional Interview
  - 4/3/2018: Sensor Fabrication
  - 4/12/2018: Hardware Fabrication
  - 4/22/2018: Game App Development
  - 5/2/2018: Final Project Testing

**SPIRO ENGINEERS**

- **Evelyn Yadira Vasquez**
  - Team Leader
  - Public Affairs

- **Nini Nguyen**
  - Signal Processor
  - Quality Assurance

- **Lucy Zhuang**
  - Process Eng.
  - PR Manager

- **Truc Dinh**
  - Process Eng.
  - Mech. Design

- **Zhen Wan**
  - Software Eng.
  - Device Validation

- **Alex Nguyen**
  - Quality Assurance
  - Device Validation

**PROJECT CONCEPT**

- **Stretch Sensor**
  - Monitors chest wall activity
  - Stretches based on inhalation and exhalation
  - Less invasive alternative to breathing tube for measuring lung capacity.
  - Prototype One design: Sensor embedded into elastic band.

- **In-Development**
  - Reusable sensor encapsulation housing
  - Less restrictive
  - More responsive sensor encapsulation

- **Software Design**
  - Developed python-based game design for incentivized therapy
  - Space Invader arcade game to encourage deep inhalation and exhalation.
  - Calibrates to each user.
  - Inhalation moves player to the right, exhalation to the left.
  - Multiplayer feature to stimulate collaboration among patients.
  - Range of mini-games options
  - Cloud-based time and improvement logs for Healthcare Team

**ACKNOWLEDGEMENTS**

Thank you to the University of California - Irvine Applied Innovation and to Dr. Michelle Khine and Khine Lab for the support, mentorship, and technology. Thank you to UROP for project funding and Midmark for testing equipment.

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