P.A.P.A.Y.A

Posture Analysis and Proactive Alignment for Your Awareness

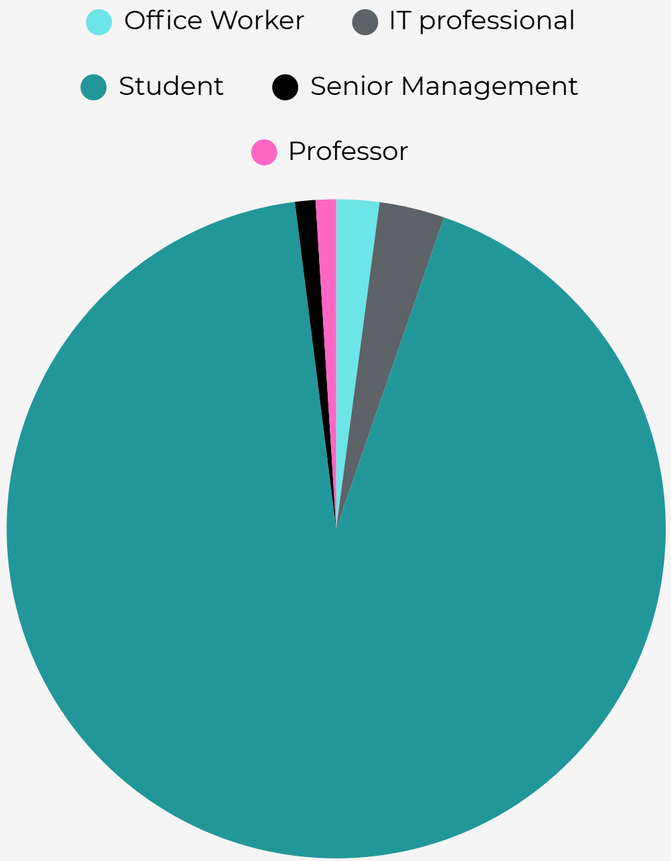
By Team Prometheus

Poor Posture & Its Impact

- Students with poor posture: 55.1% report LBP vs. 32.7% with good posture
- Back pain is the single cause of disability worldwide, resulting over 264 million lost workdays annually
- 54% increase in disability due to low back pain from 1990 to 2015

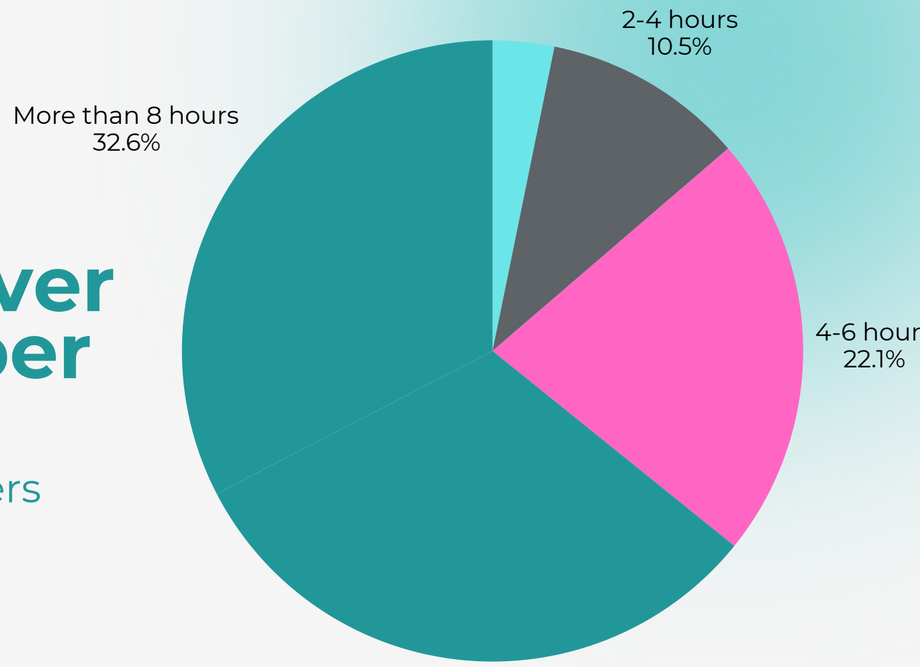
“We asked 95 stakeholders...”

Target users: **people who stay seated for longer hours in the day**



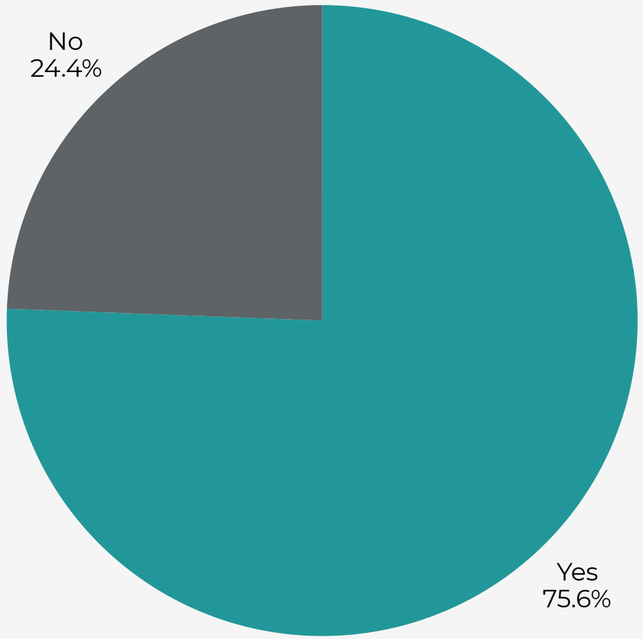
63% sit over 6 hours per day

Of Total Responders



Over 75% report discomfort, or back pain

Of Total Responders



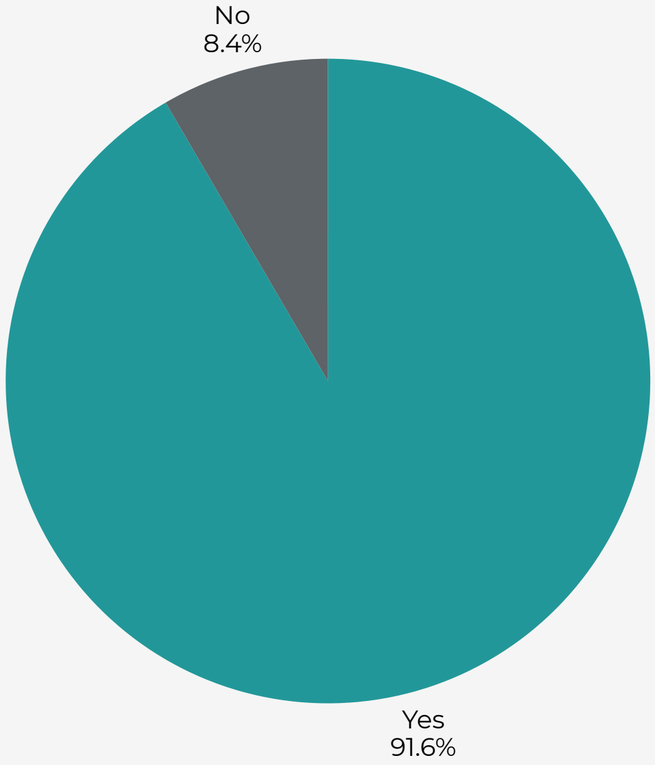
“Majority faced...”

Slouching

Leaning forward

Losing track of posture

“Would you consider using a posture correcting solution?” 91.6% said they would consider



“The solution should be...”

Comfortable

Discrete

Non - intrusive

Introducing P.A.P.A.Y.A

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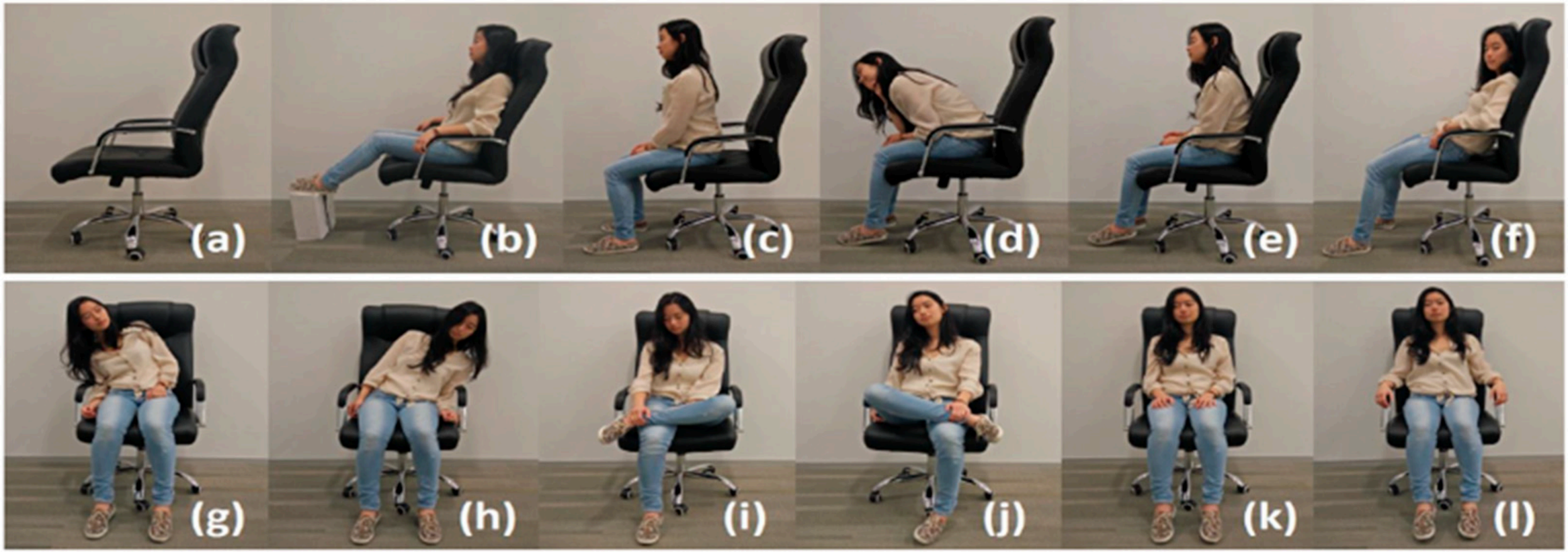


(a) Seat not in use (unoccupied)
(b) User is in front of chair with legs raised
(c) No contact with back (sitting forward)
(d) Torso forward, no contact with back
(e) Torso is lightly tilted forward (lightly forward)
(f) Front of chair, leaning backward
(g) Leaning left or forward left (leaning left)
(h) Leaning right or forward right (leaning right)
(i) Left leg crossed (left crossed)
(j) Right leg crossed (right crossed)
(k) Torso and legs are correctly aligned (good posture)
(l) Torso/legs correctly

- **Sensors**

Force sensitive resistors (FSR402) for pressure mapping

Ultrasonic sensor (HC-SR04) for back distance

- **Feedback**

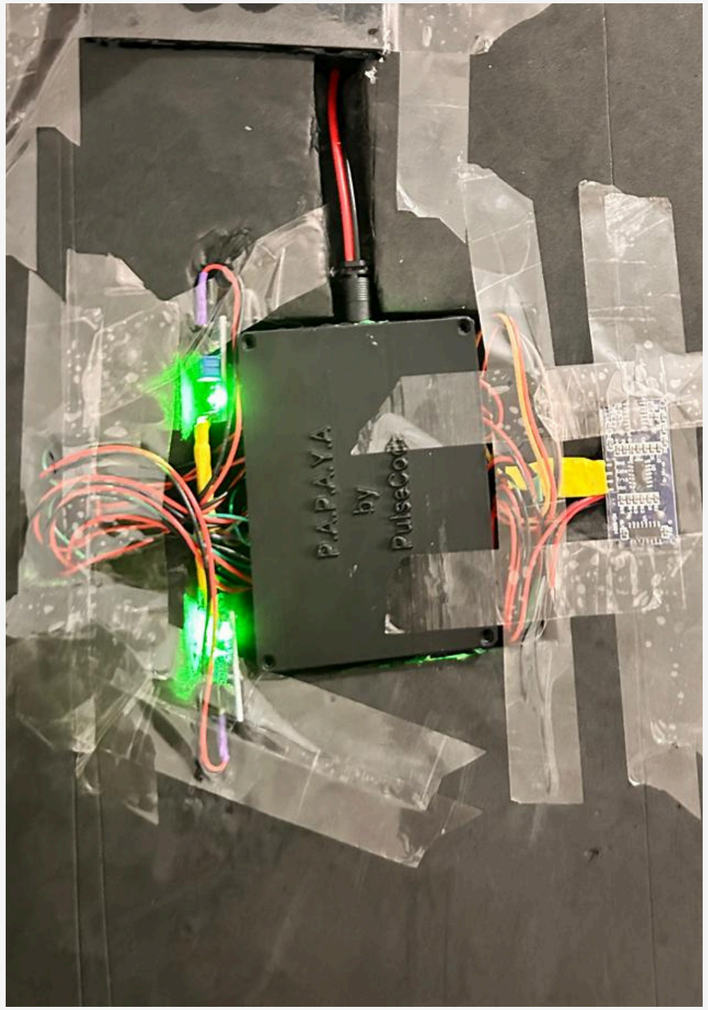
Vibration motors for non intrusive alerts

- **Controller**

ATmega328p microcontroller for processing posture logic and control

- **Power**

7.4 V Li-ion battery pack



- **Controller**

ATmega328p microcontroller for processing posture logic and control

- **Power**

11.1 V Li-ion battery pack

MVP Demonstration

Interactive features

On/Off button

Battery level indicator

Next Steps

AI-Powered Personalization

Implement lightweight machine learning models to personalize posture detection based on each user's body shape, habits, and seated patterns.

Advanced Cushion Materials

Upgrade to breathable, antimicrobial, and ergonomic foam for long-term comfort and hygiene—especially suited for warm climates and extended use.

Stretch & Microbreak Reminder

Add optional timers to gently remind users to take breaks or stretch after prolonged sitting sessions—without breaking focus.

“We’re Team Prometheus”

Chaleesha Keerawella

Mokshan Colombage

Abdul Rahman

Buddhima Imbulpitiya

Thank You!