

Can A Glove Stop A Heart Attack?

2188, Biomedical Engineering, Senior Division, Engineering Type Project

Engineering Problem & Objectives:

Problem: Snow shoveling leads to thousands of heart attacks and hundreds of deaths every year. Per studies, the day after an 8-inch snowfall, heart attack deaths are 34% higher than normal, and hospitalizations are 16% higher. Decrease of 1-degree Celsius causes a 0.5% spike in deaths



Objective: To create a device that will monitor heart rate, temperature of surroundings, time and display health status to the user when performing strenuous winter activities such as snow shoveling to prevent or detect cardiac issues.

Data Analysis & Results

Met design goals of displaying Heart rate, Air temp, Timer, and Health status (Good, Bad, Take a break with associate LED lights (Green, Red, Blue).



Results before and after exercise

Trial	Temperature	Initial Heart Rate	LED Color	Final Heart Rate	LED Color
1	23	89	Green	143	Red
2	22	93	Green	125	Red
3	22	92	Green	122	Red
4	24	95	Green	138	Red
5	24	95	Green	125	Red



Project Design

Design criteria:

- Measure Heart Rate, air temperature, time
- Display health status information.
- Recommend to take a break every few minutes
- Have LED lights that change color based on health status to attract user attention
- Come in a convenient form such as a glove so that no additional device is required

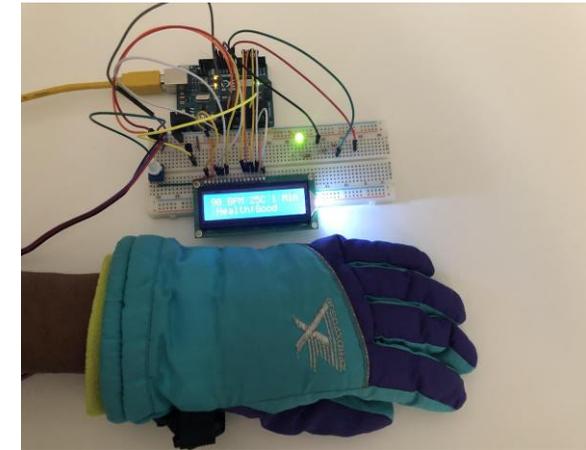


Glove 3D Model

Interpretation & Conclusion

Our project proved that it can monitor vitals and display health status information to the user instantaneously while performing strenuous winter activities such as snow shoveling.

This critical information will enable the user to take a break when they could be at potential risk and save themselves from a heart attack and potentially death. Thus, it can be concluded that A Glove could stop a Heart Attack.



Functional Winter Glove Prototype