# Can a Glove Prevent a Heart Attack?

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Every year in the U.S alone 100+ people die and thousands experience heart attacks while shoveling the snow. Studies show that the combination of cold air, which constricts arteries, and strenuous activity increases the chance of heart attack. My goal is to make a cost effective device that will alert users of cardiac risk during strenuous winter activities. To solve the problem, I have designed a glove that monitors heart rate, air temperature, time, and displays health status messages ("Good", "At Risk", or "Take a Break") with the respective colored light (green, red, blue). Whenever the heart rate is too high for the air temperature, the glove displays an "At Risk" message on a LCD screen on the glove along with red warning light to get the user's attention and avoid cardiac risk. I have tested the accuracy of the heart rate displayed on my device at room temperature and at below freezing temperatures using a pulse oximeter. I have conducted a five trial experiment to test if the device displays "Good" (green) when the body is at rest or "At Risk" (red) when the heart rate is past the threshold. Note the threshold parameters were set low such that a heart attack was not required to demonstrate that the device works. To increase heart rate past the threshold, I ran up and down stairs. The testing by me demonstrated that the device functions as intended. Thus, it can be concluded that a glove can stop a heart attack.

**Awards Won:**