Athlete Temperature Sensor: A Novel Approach to Heat Exhaustion Monitoring in Student Athletes

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Heat exhaustion is the leading cause of death in student- athletes. This project proposes the idea of creating a system to remotely monitor individual student-athletes' temperature to prevent heat exhaustion. The system uses a temperature sensor and a raspberry pi attached to an athletic vest that can be worn under practice uniforms. A graphical interface is used to monitor each athlete. To test the system for accuracy, the athletic vest was placed on a CPR mannequin with a heating pad attached. A Vernier temperature probe was placed next to the temperature sensor and the temperature readings of both were recorded over the course of ten minutes. The system was also tested for latency by recording the time it took for the trigger temperature to be reached and the SMS message to be received. The test results showed that the average temperature difference was .241 degrees Fahrenheit and the latency time was 10.96 seconds. The data shows that the system is not only accurate, but also has very little lag time between temperature trigger and the alert message being received. This system not only works as intended, but the data supports the claim that this system is considerably better than the current approaches and is a viable option for monitoring the temperature of athletes.

Awards Won:
Air Force Research Laboratory on behalf of the United States Air Force: Glass trophy and USAF medal for each recipient
Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Regeneron ISEF Category