**Boston University**

**Electrical & Computer Engineering**

**EC463 Senior Design Project**

Customer Installation Report

**Running Safety**

Submitted to

Professor Alan Pisano

Boston University

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by

Team 22

Running Safety

Team Members

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Submitted: 04/25/2019

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| 1. We performed our customer installation on April 25, 2019, in the Senior Design Lab (113). Present were three of the team members, Tom, Payton and Zexing, and our customer Professor Pisano. |
| 2. The requirements for our device in order to prove it was functional:  \*Both parts successfully turn on and connect to each other  \*The shoe device detects when force is not present and alerts the user  \*Measures whether the user’s pulse rate is abnormal or non-existent and alerts the user  \*Verify the cancel button correctly works during a false alarm  \*Emergency contact is sent the location of the user when the emergency is detected  \*All pieces fit together and work while being worn by a user |
| 3. Overall, our product worked correctly and completed all of the above requirements. To start, Professor Pisano asked if during prior testing trials we noticed the show insert was uncomfortable and if we could notice that only one of the shoe inserts had the actual device. Payton is the team member who tested it prior to the installation and she explained that the insert a tad heavy, but not due to the overall device. In the future development, we would invest in a lighter shoe insert so it is better for runners. We then begin our installation test. For the test, team member Tom Cimino demonstrated using the device by inserting both shoe inserts and wrapping the device around his chest. Zexing Gao helped with supporting data and software material. We explained that a new design route we took was to have the user wear the overall device on their back, while the pulse sensor and velcro straps wrap around the front of the user. We determined that this would be more comfortable for the user and also not cause the device to move around and fit better in comparison to the front. We demonstrated both devices turning on and connecting to one another, then reading each “emergency” separately. Because we cannot “test” of a “fake” heart rate patterns, that could not be demonstrated during the installation. But, we have performed tests during the design of our product that verified that the heart monitor can detect when one’s pulse rate is out of a certain range. We did demonstrate how not having any force on the shoe insert would alert the device and allow the user to then cancel with the emergency button if it was not an actual emergency. We demonstrated both hitting the cancel button and not hitting the cancel button. When we did not hit the cancel button, an emergency text was sent successfully to Professor Pisano’s cell phone because he previously registered with the device with his own emergency contact. All requirements were met and we successfully installed the device for Professor Pisano. Following the installation, Professor Pisano gave us some feedback on how to make sure our device was ready for ECE day. He was very pleased with the overall functional part of our project, but he believes the design could be better and look a little more professional and clean cut. Therefore, we will redesign the overall design casing for the device prior to ECE day. You can find Professor Pisano’s email below with his notes and comments, overall the installation was very successful! |
| 4.  Team Running Safety  I reviewed your system today, April 25, 2019 and am very pleased with the work you have done. I especially liked the sensor in the shoe insert and thought this was a clever idea. While the chest strap electronics could have been streamlined in a better package, the 3-D printed housing is certainly adequate for an “alpha” version. However, I was a bit disappointed that the housing (with the lid attached by spacers) seemed less professional than the rest of the system. Perhaps a new case could be produced for better esthetics. That said, the team did a very good job of meeting my requirements. And thanks for your hard work on this project.  Prof. Alan Pisano  Client - Running Safety  Sent from my iPhone |

Appendix:

Email Screen Shot

