ANGEL Wings Bicycle Seat Testing

Overview
The sponsor wanted the team to conduct research, testing, and developing the ergonomic aspect of the Angel Wings seat in order to review the further needs. The team tested two methodologies, learning curve testing and oxygen utilization testing, to satisfy the needs of the sponsor. Ten test subjects had been tested and statistical analyses were done to execute the results of the tests in the project.

Objectives
- Perform a two part test to evaluate the learning curve associated with the ANGEL Wings seat
- Develop an instructional YouTube video to teach riders proper riding form, address common problems, and improve the learning curve
- Work with the Kinesiology department to perform oxygen utilization tests that compare difference in oxygen utilization experienced by the subjects on a regular bike seat and on the ANGEL Wings seat

Approach
- A site visit was done to gain a better understanding of the product and the sponsor’s objectives
- We decided on the direction we wanted to approach and planned how we would achieve the goals
- We spoke with colleagues and brainstormed about the most important attributes of a bike seat
- We designed the learning curve tests, spoke with a bike seat fitting expert, and ran a pilot test
- The learning curve testing was split into two parts: without an instructional video and with the video
- An instructional video was created to address problems experienced by the test subjects
- Ten volunteer test subjects were used to perform the learning curve testing
- We spoke with the Kinesiology department and IE Human Factors department about the best way to conduct an oxygen utilization test and what to look for with the results
- Ten volunteer test subjects were used to perform the oxygen utilization testing
- Results were analysed using MS Access, MS Excel, and MiniTab according to the tests recommend by Dr. Freivalds

Outcomes
- Subjects that watched the instructional video experienced greater stability while riding the ANGEL Wings Seat
- Subjects that watched the instructional video had better body positioning while riding the ANGEL Wings Seat
- With 99% confidence, the ANGEL Wings seat is statistically significant with respect to oxygen utilization meaning that the ANGEL Wings seat caused the riders to have higher O2 ratios
- A recommendation: Include instructional video for new users and encourage users to watch it prior to each use until proper form is achieved