Prior Design Concepts

The prior design of the bike had some good aspects and some bad. The frame itself, the seat, and the pedals were good aspects. The bad aspects were the tilt mechanism, the display, and the resistance mechanism on the pedals.

The Frame

- The design concept was to create a stationary bike that could tilt causing you to maintain balance.
- It has a low step through for patients to get on easily.
- There is a locking mechanism at the back that works by cranking a shaft into the part of the bike frame holding in place.
- There are ropes on the front of the bike that are measured to only allow the bike to tilt 5, 10, or 15 degrees
- At the front of the bike there is a ball and socket type bearing, allowing the bike to tilt.

Pedal Mechanism

- The design concept was to cause resistance on the flywheel by increasing the pressure on a piece of hard rubber
- The difference between the kinetic and static friction was too large causing a “skipping” motion.
- The skipping motion made the bike unusable.
- The pedals are a good length for the patients to use.
- There are two bearings that support the pedals and the flywheel.

The Tilt Mechanism

- The design concept was to use rubber tubing to cause resistance for the rider
- When on the bike there is a huge difference between the resistance when you are about to fall over and when you are at five degrees.
- The rubber tubing wasn't stretched enough in the original position causing the tubes to have a slack before they cause a decent resistance.
- The intention was to have sets of tubing that could have been replaceable based on the desired resistance, but the customer felt that removing the tubing was too hard and dangerous.

The Display

- The design used a multimeter that was supposed to tell you if you were tilting so the patients could understand and correct themselves.
- There was a speedometer that worked well.
- The display itself was bulky and didn't work when plugged in.
- There are wires all over the place which could be a hazard.