Past Week:

This past week, Christen and Drew attached the aluminum side rails to the bottom of the positioning aid to help in eliminating the flexion in the board. The aluminum side rails were attached with silicon bronze bolts every 6” down the entire length of the board.
After the aluminum side rails were attached, the PVC cross members were cut and filed by the all of the team to fit snuggly in between the aluminum rails. The Bhavin was able to take these PVC cross members to the machine shop and attach them using silicon bronze bolts as well. The PVC cross members were placed in the following locations on the board: 15” and then one 39” and the other at 55”. The addition of these cross members helped to eliminate the flexion in the board as planned. The picture below is the board with the aluminum side rails as well as the PVC cross members:
Since the flexion part of the design was finished we were able to test the board using a member of the senior design lab, this can be seen below.
After finished the flexion problem we were able to attach the four aluminum handles one on each side at the top and one on each side at the bottom. We are still deciding what to do for the center of the board. We have two handles but fear that they may interfere with the patient getting on and off of the board because they are a little over 2” tall. We are considering cutting them down slightly in height or even the possibility of using nylon for the two in the center and only using them only when necessary.

Figure 5. Team effort to attach handles

Each team member has helped and made sure all that all of the parts on the board have all been changed out and are non-ferrous so there should be no interference in the MRI whatsoever.
The other task now that the aid is almost completely finished is trying to figure out a way to store this device in the hospital area. We are considering the basic L wall mount and laying the aid horizontally on the wall in it and then building a box that can hold the attachments. This box would need to be about 17” x 24” to best accommodate all of the attachment pieces. But we feel that it would be in the best interest to avoid lost parts if there was one general place they were stored. There would also be the possibility of using foam and cutting it to fit all of the pieces in their designated spot.

**Upcoming Week:**

Early this week we are going to recut the arm bar since its current length is exactly where the aluminum side rails are attached to the board we need to shorten the arm bar so we have a way of attaching it on the board. Bhavin will cut it in the machine shop and I will attach it to the board using the silicon bronze bolts. Also this week we should be receiving the custom foam pad that we ordered and the group will be able to secure it to the board using the Velcro.

We will also make a final decision regarding the storage of the device and what we are going to do about the two handles in the middle of the board.

Lastly, this coming week we are going to do all of our testing, which includes being able to test patients on our prototype for the weight capacity and ability to provide stability to those suffering from mild tremors. We are anticipating having a person around 250 pounds test out the board physically and then doing a 500 pound test using the theoretical body segment weights. Also we are planning on having a member of the lab use the positioning aid without the use of their right arm or legs to mimic the current state of the patients we are designing this positioning aid for.
Project Review:

We are currently on time, the board will be finished by the middle of the week and a good amount of testing will take place Friday, which will allow sufficient time to trouble shoot any problems we may run into although we anticipate things to run pretty smoothly as we have tested the arm and leg attachments throughout the semester and the flexion in the board has been greatly diminished. This will also us extra time to work on the final paper, user manual, and slide show presentation.

Hours Worked:

Drew: 11 hrs.
Ashley: 10 hrs.
Bhavin: 12 hrs.
Christen: 14 hrs.