Patient Positioning Aid

Week 9
Date: March 28, 2006
Bhavin Patel

Work Completed:

We were able to finish up a lot of things this week. We completely finished the flexion part of the design, and were able to get the handles onto the board. For the flexion part Christen and Drew went into the machine shop and were able to drill the holes in the side members. I helped tap them with ¼ 20 tap size. I took the PVC cross members and was able to drill and tap them. I also made clearance holes in the side members to attach the cross members with. They were made at positions 15”, 39”, and 55” from the top. Figure 1 shows how the setup will look. I also used the Sand belt to smooth out the sharp edges of the side members.

Figure 1: Display of Flexion Setup
We were able to test out the flexion with the new side bars and cross members. Figure 2 shows the results with Seth lying on the transfer board. As you can see the transfer board doesn’t bend at all. This picture was taken without secure attachment of the cross members, so the final product will have even more support to prevent flexing.

Figure 2: Flexion Test

Then on Friday we all put the handles onto the board. Christen drilled the holes while Drew and I held the transfer board. Then we all screwed in the handles. We put four handles in on the four corners. We have decided to wait to see if we need two more in the center since they will be in the patient’s way when getting on to the positioning aid. Figure 3 shows us attaching the handles.
For a few applications it was necessary to cut down bolts. I was able to cut some down for the side member attachment since a few holes weren’t far enough for the whole bronze screw. I used the sand belt to sand down the bottom and allow for correct attachment. A few carriage bolts were cut down for applications with the track systems.

With the side members attached, we realized that there would be a problem in attaching the handbar. In order to rectify this, we decided to cut down the handbar and then attach it. I was able to take it to the machine shop and recut the pieces. The only problem was the angle wasn’t exactly 45 degrees. I will need to go back and sand down the bars to allow for correct attachment.
Future Work:

I plan on fixing the cut to the handbar, after which we will glue the pieced together and attach it to the board. We have already started testing a few parts of the positioning aid, and will be able to test more this coming week. If we get our new cushion in, we will also secure it to the board using Velcro as well as secure the headrest. This will not take long so even if we get it later there will be no problem.

Project Overview:

We have completed most of the project and plan will be done with the positioning aid soon. We are meeting our set forth objectives. There is no need for last minute action at this point.

Hours Completed:

BME Lab: 6 hours
Machine Shop: 4 hours
Outside Lab: 2 hours
Total: 12 hours