Week #10
April 4\textsuperscript{th}, 2006
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Work Completed:

This week we finished all of the actual assembly of our project. All that we had left to attach was the handbar and the PVC crossmembers and we attached those in lab on Friday. Earlier in the week Bhavin took the handbar into the machine shop and cut it down so that it would fit between the aluminum pieces. In lab on Friday Christen, Bhavin, and I then used the drill press and drilled holes into the bottom of the handbar and then finished them off by tapping them with the tap kit. The following figure is a digital image of us using the drill press on the handbar:

Bhavin also drilled and tapped holes into both ends of the three PVC crossmembers, so in lab on Friday our whole team spent a lot of time fitting them between the aluminum pieces. It took some time to fit the PVC crossmembers between the aluminum pieces because we had measured and cut them to the almost exact distance between the two aluminum pieces. We did this in order to ensure the best fit and maximum flexion reduction. The PVC crossmembers were attached to the aluminum pieces using silicon bronze screws, and the handbar was attached to the transfer board using the same screws. The following figure is a digital image of us fitting the PVC crossmembers between the aluminum pieces:
Once we had installed everything on the bottom of the board we then reassembled the top of the board and I got up onto the device to test the positioning of everything. The following figure is a digital image of testing the device:

I found the device to be comfortable and each component served its purpose efficiently. The leg stabilizer was secured well enough to keep me from moving my legs, and it was still quite comfortable. In testing I decided the arm stabilizers worked better positioned
under my arms such that they actually helped to hold my arms up. With the arm stabilizers in this position I had to expend little to no effort to keep my arms in the desired position. The only other modification to the device that I noticed was that the ends of the arm stabilizer were very close to my head and face, so we decided to cover these ends with polyfoam. The following is a digital image of the glue setting on the newly covered arm stabilizer:

Future Work:

All of the components of our patient-positioning aid are assembled and attached to the transfer board. The only actual part that is not fully finished is the pad that will lay on top of the transfer board. The other week we ordered a new pad whose dimensions were planned specifically for our device and once this comes in we will attach the Velcro pieces to it and then the entire device will be finished. Besides putting the Velcro on the pad and transfer board, no other work needs to be done to the design. Now we have to test the board according to the various patient specifications and write the owner’s manual and final report for the device.

Project Review:

We have successfully completed the overall construction of our device. We anticipated to be done with this construction a few days earlier than we actually were, however the drilling and tapping of many of the pieces in the machine shop took us longer than we had anticipated due to us taking our time to ensure all the measurements were correct. Once every component was assembled and attached to the board I got up onto the device to test it out and I thought it worked out exactly as we had designed it to.
The arm stabilizers eliminated me from having to expend any effort keeping the desired arm position, and the leg stabilizers efficiently and comfortably secured my legs in place.

Hours Worked:

In lab – 6 hours
Out of lab – 2 hours
Total – 8 hours