

Mon-Fri 2013.06.17-21 LL

As mentioned last week, there were lots of strange clinking sounds coming from the erg and the pull during the drive didn't feel quite right and the chain was always slack. For this week, we worked to fix these problems.

Noise & Alignment

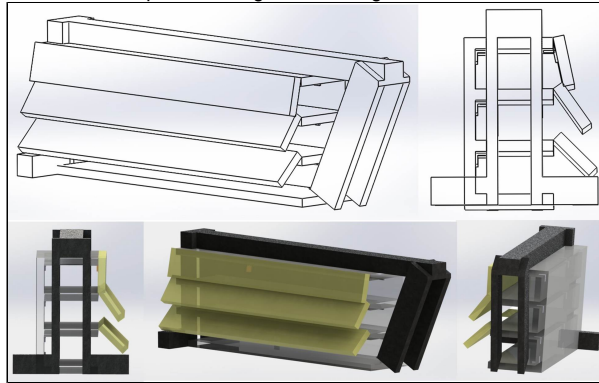
- We tightened all nuts and bolts to eliminate rattling of loose parts as the cause of the problem
- The drive sprocket and casing which contains the differential are supposed to be parallel and attached with screws and bolts. We worked to align these in a more parallel fashion, but it was difficult to completely tighten the bolts, due to the tight spacing of the differential.
- We decided that we had previously loosened the flywheel chains too much, and thus tightened the chain again.

Chain & Parts

- Parts of different chains keep falling off. One of links of the chain attached to the stiff bungee split off and we had to buy a master chain link from the Bike Shop in College town to replace it.
- We need more u-clips to hold master links together... they get bent easily and break.
- We noticed that not having long enough threaded rods or threaded rod of a certain diameter was a reoccurring issue, so Andrea ventured to get threaded rod from Lowe's. She bought 3 feet each of the 3 smallest diameter rods: 8-32, 10-24, 1/4"-20. However, she did not get nuts for them, in case we have the correct sizes already at the lab. We tried the existing nuts (which did not fit) and purchased 10 of each type from the stock room in Clark Hall's Shop.

Bungee & Frame

- In an effort to make the stiff bungee contraption more accessible and fixing parts easier, we took the stiff bungee out of the top bar and fixed the ends along the vertical bar holding up the smaller wheels. We then transferred the soft spring into the top bar, since we usually do not need to access it and the way that it is assembled (on a flexible rod) makes good use of the enclosed bar to support itself. Now the erg feels a lot lighter in mass!
- There was still too much slack in the handle chain, so while we tried out the erg, we temporarily wrapped some of the chain around the handlebar and pulled. This turned out to be a bad idea, as now the chain was too tight, resulting in the soft bungee coming unraveled in the rod attachment (which is now in the top bar). Getting the bungee+rod contraption out proved to be quite a challenge, as bolts holding down the bar kept getting in the way, and the pulleys of the rod were also tightly fitted. This made us contemplate building a see-through frame for both stiff and soft bungees so that they could both be



out in the open. I worked on the CAD for that.

Figure 1: Collage of CAD. The see-through frame would be bolted on the top bar (only existing bar on erg) and vertical bar (attached to smaller wheels in the back). Material is probably acrylic or some sort of thin, see-through plastic. L-shaped metal hinges (fixed and movable) would keep the shelves attached together. There are a total of 3 shelf compartments (1 for the stiff bungee, 1 for the chain attached to the stiff bungee as it loops around the axle sprocket, 1 for the soft bungee). One side can have hinging "doors" to allow access to the compartments during fixing, and provide walled support otherwise. Attachment to the footrest (slanted bar in front) is tricky and will need to be better thought out. See [2013.06.19 Bungee_Spring_shelf idea](#) folder on BOX for official files.

Presentation

- We Skyped Prof Ruina to further hone the presentation for Concept II. For data, he said that the current graphs (position, velocity) that we have are not useful, and that acceleration graphs are what is more important. We will need to contact Ellen to obtain those, and to get higher quality graphs.
- We also whittled down the slides to reflect the main ideas of our design. I would like to have more numbers and data to prove our point that Rowgometer is better than the other ergs, however.