

Wed-Fri 2013.07.03-05 LL

Physical Erg

To address the issue of excess slack in the handle chain, we took a couple of measures:

- Andrea had some bike chain lubricant (Teflon Bike Lube) that we used to loosen stiff links
- We put in more pretension in the soft bungee (8 inches)
- We plan on adding another pulley/sprocket for the handlebar chain, as an intermediate between the bar encasing the soft bungee and the differential. We need to figure out a way to hold up such an assembly, but the purpose is to add more "back tension" -- tension on the chain, in the direction opposite the pull of the handlebar, so that the chain has a tighter grip on the sprocket.

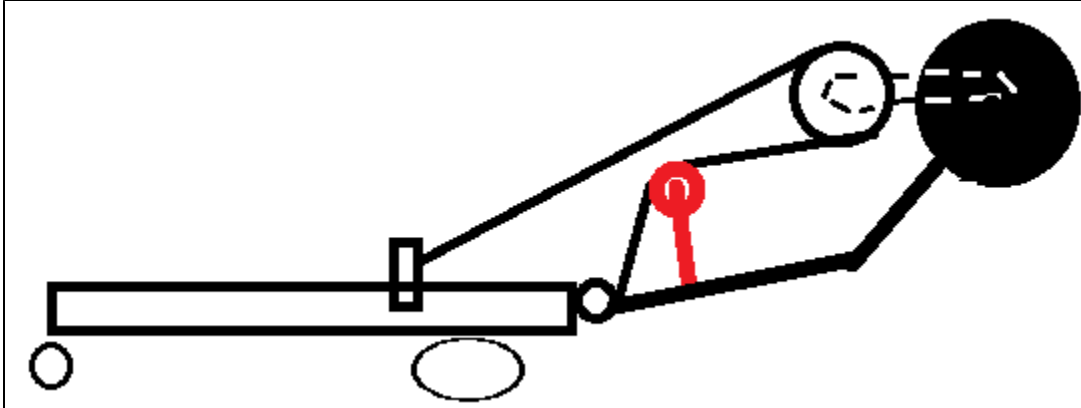


Figure 1: My depiction on MS Paint of adding an extra sprocket/pulley for the chain to ride on to create back tension on the handlebar chain. Not the best illustration, but gets the point across. We're getting really good at churning out diagrams of ergs. :D

Software

- As mentioned last time, we got the data curves for the 4 types of ergs (stationary, on slides, Dynamic, and Rowgometer).
- After comparing to online videos and pictures, we think that what we thought was the Dynamic might actually not be the Dynamic erg. :O Andrea thought it looked like a DIY transformation from a stationary erg to a dynamic erg. Concept II's Dynamic erg has a stationary display which is not attached to the sliding foot rests, whereas the erg we tried connects the display with the footrests. The Row Perfect's dynamic erg has the same setup as the erg we used, so the two should be equivalent.



Left to Right: Figure 2 - Concept II's Dynamic Erg; Figure 3 - Teagle Rowing Room's dynamic erg; Figure 4 - Row Perfect's dynamic erg

- Prof Ruina urges us to use the Vicon Motion Capture system from Prof Jane Wang's lab. We contacted her and she is hesitant to let us use the equipment, citing its complexity to learn to use and that her grad students are all busy and would not be able to train us until the fall. We visited the setup, which consists of an area in the range of 3 cameras connected to a computer system. It is quite limited in space and I am doubtful as to whether the cameras' range would accommodate all of our erg's movements. Additionally, there is the problem of how to capture the motions of the other ergs, seeing as we cannot take them from the rowing room, and the Vicon system is fixed.
- If we can get around the issue of space, the Vicon system looks quite promising. Prof Wang sent us the file of an abbreviated user manual: [2010-Vicon-UserManual.docx](#) The entire user manual. This [guide from the web](#) might be more detailed.

Video: Short video using Vicon to track motion on treadmill.

- Prof Wang also mentioned ImageJ as another tracking software. I briefly used this for my ENGR1 course to count and track air bubbles, but after looking more into the software, I think that it is more suited for counting small particles. It also doesn't seem to have the autotracking feature found in Tracker, which means manually clicking through thousands of frames :(

- Gregg (sp?) used Vicon in the Ruina lab before... we're contacting him to learn more and see if he can teach us to use it.