Week 5 - Assignment Instructions

In week 5 we have looked at how many metrics have been developed in order to try and capture “global indicators” like sleep quality, body battery, VO2max, etc. These are exciting -- but we also need to be mindful that they are hard to test and validate in some (actually many!) cases.

In the workbook, we have “played” with some data to create a sort of “global metric” of our own. As a physiologist -- I did a little creative work to see what different physiologic characteristics we could put together from a large dataset. Then I used a little statistics to normalize the athletes to each other -- to allow them to be ranked according to different characteristics. As we have had some limited heart rate datasets -- and we have looked at heart rate the last two weeks - I decided to leave heart rate off of the analysis. I decided to stick with the external measures that we have available including: 1) Athlete peak velocity; 2) greatest distance traveled in a sustained run (for 30 seconds); and 3) farthest distance traveled in a 3 minute period (as I wanted to sneak the endurance piece in there somewhere).

So -- I have put together a simple metric regarding field hockey performance. It is my simple “global metrics” performance score for team sports that involve running. In field hockey (and many team sports), the ability to move rapidly (e.g. out-sprinting your competitor or winning the battle to the loose ball) as well as the ability to maintain a sustained effort throughout an entire game, are critical variables involved in the sport. Of course, for most sports there are many other critical skills that make or break a team as well (e.g. free throw shooting in basketball). So this performance metric is really mostly a “raw assets” metric related to movement.

**Scenario:**

For your assessment, there are some coaches that feel I was really off-base with my 3 minute distance covered. They want you to use different criteria. Namely: 1) Maximum (positive) acceleration; 2) 20 second farthest distance; and 3) 60 seconds farthest distance. So, the scenario for this assignment is to revisit the performance metric that we did in the workbook -- but with these new criteria.

These are the steps that you need to take to complete the assignment:

1. Load the datafile (FH.csv)
2. Create a copy of the dataframe and clean up the columns by just focusing on the ones you need. Consider making a multi-index with both the timeindex and the AthleteID.
3. Make your new variables for the performance metric -- specifically the 20 second farthest distance traveled and the 60 second farthest distance traveled
4. Run a groupby with agg to collect your max values for acceleration and your new variables.
5. Calculate the z-scores for all of your performance variables.
6. Using the z-scores, sum the values to determine the performance scores. (We added a number to our performance metric to avoid having negative values. Adding this number is arbitrary and optional.)
7. Finally, evaluate whether the same top 2 athletes are still on top of the rankings even though the criteria changed.