Week 3 - Assignment Instructions

In week 3 we have looked at internal sensors that can record measures like heart rate, muscle activity, muscle oxygen availability, etc. In the workbook, we have had a look at all of the data from Catapult Sports devices worn by the UM Women’s Basketball Team during a double-overtime victory in the 2019 season. We have determined the mean heart rate and the TRIMP value for all the players with heart rate data for that game session on March 8th. However, we seemed to have a huge gap in the TRIMP values between the top 4 values from the athletes and all the rest of the athletes. This is curious since there are always 5 players on the court.

For this assessment we will use the same functions and methods to answer some questions from the same dataset.

**Scenario:**

We have explored (in the workbook) the game from March 8th, 2019 -- and the dataset that we loaded actually has games from January 8th and March 9th of that same season. You are welcome to look at January 8th BUT -- it is a bit of a mess. The collection period of the devices for that day is hugely different… so it is a tougher dataset to clean up and understand. So, we’ll focus on the March 9th dataset! Since we seemed to have 4 players with a very high playerload and TRIMP score compared to the rest on March 8th -- it begs the question of what other players were filling that 5th position? Let’s explore the March 9th dataset -- and see if we can figure it out! As always -- we need to clean up the dataset first and make sure we have quality heart rate data. Then we can calculate mean HR values for the session and calculate TRIMP values for the team...and see if we can predict the 5 main athletes from the game. These are the steps that you need to take to complete the assignment:

1. Load the datafile (WBBtotal.csv)
2. Make a new dataset (or dataframe) using only measures of interest (seconds, heart rate, player load and Athlete ID).
3. Create a slice of the dataframe to use for this assessment based on the date of the game: March 9, 2019.
4. Determine the total number of HR data points that were recorded with a value of zero.
5. Determine the % of the missing HR data for each individual athlete.
6. Plot the heart rates across the session (ie. seconds vs heart rate) for the players with the highest and the lowest player loads for the game session.
7. Plot the heart rates across the session (ie. seconds vs heart rate) for the mean of all players for the game session and use the values to estimate when the half-time period occurred (approximately how many seconds (or minutes) into the session.
8. Using the same estimations as the workbook (i.e. maximal heart rate of 200 beats per minute and resting heart rate of 60), calculate the TRIMP value for each player on the team. (Reminder - you need to calculate mean HR values to determine TRIMP)
9. Identify the athletes with the top 5 TRIMP and player load scores. Which of these was not part of the top 5 on March 8th (answer can be found by looking back at the workbook which focused on March 8th)