**Core-B Project summary**

7/1/2020

**The goal of the project:**

1. Incorporate circadian activity rhythm analysis into R-GUI [*carv*and *nparACT]*

2. Create a single, consecutive data file for each subject from the numerous sequential actiware .csv outputs.

3. The program should allow batch running of.csv file output from actiware to calculate *carv*and *nparACT* variables

4. Develop valid imputation of missing data [current existing codes assume NO missing data]

5. Convert and expand current actigraphy macro in R to calculate more than 80 variables and new project-specific variables. The new program should include an Increased number of days. Calculate all of the present macro variables and incorporate the existing R code for sleep midpoint calculations. Determine if we can integrate data already entered into REDCap, such as work/free days and other daily log information to be read directly into the code, so no additional/double data entry is needed to calculate desired variables. Incorporate current error log functions and further develop error flagging as required. Incorporate the existing sleep regularity index (SRI) code into the program and develop relevant plots of all data.

**Work completed**

The following are the tasks that I have done so far:

1. Incorporated circadian activity rhythm analysis into R-GUI [*carv*and *nparACT]* (**Project Goal-1)**

*2.* R-GUI merges all the data files of the same subject into a single csv file and done the carv and nparACT analysis for user-defined dates. **(Project Goal-2)**

3. New R-GUI allowed batch running of.csv file output from actiware to calculate *carv*and *nparACT* variables **(Project Goal-3)**

R-GUI output

1. computing 5 non-parametric measures from actigraphy data. The variable are (1) Inter-daily stability (2) Intra-daily variability, (3) Relative amplitude (4) Start times and average activity during the 10 h with maximal activity (5) Start times and average activity during the 5 h with minimal activity

2. Fits a transformed cosine curve to the actigraphy data

3. It output basic information about actigraphy data which include ( 1) start and end dates, (2) start and end time, (3) sampling time, (4) Percentage of missing data, (5) Number of full days

**NB:** Basic R program for nparACT and carv is provided by Dr. Braun, and I modified it. All the analysis are done on the data provided by Dr. Reid and Dr. Braun

**Work in progress**

(1) Incorporate actigraphy macro analysis into the GUI (2-3 months)

(2) Develop valid imputation of missing data (1-2 months)