Read Me

This document gives basic information on the organization and use of the Subject Database. For details on the development of the model, which parameters were used to define each individual, and details on the selected gravitational scenarios please read the report and publications detailing the development of the model and the methods used to produce the data within Subject Database.

# File Organizational Structure

* Subject Database
  + Models
    - Support Files
      * calculate\_trends.m
      * doe\_glevel.mat
      * find\_initial.m
      * input\_reflex\_filters.mat
      * main.m
      * plot\_graphs.m
      * process\_output.m
    - (All Simulink cardiovascular models)
  + Scenarios
    - G Warm Up
      * GWarmUp.xls
      * PlottingGWarmUp.mlx
      * (All MATLAB Data files for all individuals for the G Warm Up Scenario)
    - Parabolic Flight
      * ParabolicFlight.xls
      * PlottingParabolicFlight.mlx
      * (All MATLAB Data files for all individuals for the Parabolic Flight Scenario)
    - Stepwise Increase
      * StepwiseIncreaseTotal.xls
      * PlottingStepInc.mlx
      * (All MATLAB Data files for all individuals for the Stepwise Increase Scenario)

# File Naming Method

## Simulink Models

All Simulink models are named to indicate the individual they represent. All models begin with “cv\_model\_CMORPH\_” followed by the individual’s indicator. The integers represent the anthropometrics. “5” represents the 5th percentile individual. “50” represents the 50th percentile individual. “95” represents the 95th percentile individual. The integers are followed by either an “F” or an “M”. “F” indicates female. And “M” indicates male. The sex indicator is followed by an underscore (“\_”). This is sometimes followed by either “Athlete” or “Dehydrated” to indicate an athletic or dehydrated individual respectively.

## Simulink Data Files

Within Subject Database > Scenarios > G Warm Up are MATLAB data files designated at .mat files.

# Changing Gravity Scenario

To change the gravity scenario, open the Simulink file you want to run. Open the “Design of Experiment” subsystem. Double click on “Gravity Level (g)”.

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Make sure that the “File name” is doe\_glevel.mat which is in the same folder as the open Simulink. If it is not, click on the file symbol and open the correct MATLAB data file.

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Click the dropdown arrow for “Active scenario” and select the scenario you want to run. The “Active signal” box should automatically fill with the corresponding signal.

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If you would like to add a scenario, double click the Signal Editor user interface. For all scenarios, it is advisable to add 1400 seconds of zero gravity before you begin your altered gravity scenario.

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After the desired scenario has been selected. Change the “Stop Time” in the task bar to the total time of the simulation. The total time for the scenario can be viewed by opening the scenario in the Signal Editor.

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# Running The Model

Open up main.m

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Change lines 5, 10 and 15 to reflect the simulation before running the simulation. Change body surface area in line 11 to align with the body surface area for the individual simulation you are about to run. See the report for the values used and how they were determined. Alter line 12 to reflect the scenario and line 13 to reflect the individual.

Click “Run”.

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