README

How to use this R-program to calculate the CO_2 constant rate (CO_2-CR) and ventilatory efficiency (ηV_E)?

Step 1: The CO_2-CR is the slope obtained from the linear portion of the quadratic regression for the following function:

$$V'CO_2 = a*V'^2_E + \boldsymbol{b}*V'_E + c$$

$\boldsymbol{b}$ = slope or CO_2-CR,

Step 2: Your spreadsheet (excel, .xlsx type, for instance) should contain only two columns (see the TEMPLATE). The first one should contain the first line with the variable "x" ($\log_{10} V'_E$), and the second column should contain the variable "y" ($CO_{2,}$ Liters) at the first line.

Step 3: Copy the path of the file and paste it to the customized R-program (Ventilatory Efficiency, Version 1), at the line

      D <- as.matrix(read_excel("C:\\file path.xlsx", sheet=1))

Step 4: After running the program, we could obtain the intercept and slope of the function $\boldsymbol{b}*V'_E + c$, in "Results" at the end of the running page.

Step 5: The final solution for ventilatory efficiency ηV_E (%) is,

$$\eta V_E = \left[CO_2\text{-CR}/(\text{MVV predicted}*0.22*0.863) \right] *100,$$

with MVV= predicted maximal voluntary ventilation.