



Supplement S1

Figure S1. Study flow and Aerobics Center Longitudinal Study (ACLS) inclusion/exclusion criteria depicting final sample size. BMI, body mass index.

Men's algorithm

$$\begin{aligned}
\text{METs} = & -0.70 \left(\frac{\text{Age} - 44.14}{9.49} \right) + 0.04 \left(\frac{\text{Ht} - 179.15}{6.51} \right) - 0.85 \left(\frac{\text{rHR} - 60.10}{10.45} \right) - 0.96 \left(\frac{\text{BMI} - 26.46}{3.50} \right) + 0.24 \left(\frac{\text{SBP} - 120.58}{12.70} \right) - 0.08 \left(\frac{\text{DBP} - 81.09}{9.32} \right) \\
& - 0.14 \left(\frac{\text{Age} - 44.14}{9.49} \right)^2 - 0.05 \left(\frac{\text{Age} - 44.14}{9.49} \right) \left(\frac{\text{Ht} - 179.15}{6.51} \right) + 0.02 \left(\frac{\text{Age} - 44.14}{9.49} \right) \left(\frac{\text{rHR} - 60.10}{10.45} \right) \\
& + 0.05 \left(\frac{\text{Age} - 44.14}{9.49} \right) \left(\frac{\text{BMI} - 26.46}{3.50} \right) - 0.09 \left(\frac{\text{Age} - 44.14}{9.49} \right) \left(\frac{\text{SBP} - 120.58}{12.70} \right) + 0.04 \left(\frac{\text{Age} - 44.14}{9.49} \right) \left(\frac{\text{DBP} - 81.09}{9.32} \right) \\
& + 0.07 \left(\frac{\text{Wt} - 85.04}{12.84} \right) \left(\frac{\text{Ht} - 179.15}{6.51} \right) - 0.07 \left(\frac{\text{Ht} - 179.15}{6.51} \right)^2 + 0.04 \left(\frac{\text{Ht} - 179.15}{6.51} \right) \left(\frac{\text{rHR} - 60.10}{10.45} \right) \\
& - 0.05 \left(\frac{\text{Ht} - 179.15}{6.51} \right) \left(\frac{\text{BMI} - 26.46}{3.50} \right) - 0.01 \left(\frac{\text{Ht} - 179.15}{6.51} \right) \left(\frac{\text{SBP} - 120.58}{12.70} \right) + 0.11 \left(\frac{\text{rHR} - 60.10}{10.45} \right)^2 \\
& + 0.13 \left(\frac{\text{rHR} - 60.10}{10.45} \right) \left(\frac{\text{BMI} - 26.46}{3.50} \right) + 0.03 \left(\frac{\text{rHR} - 60.10}{10.45} \right) \left(\frac{\text{SBP} - 120.58}{12.70} \right) - 0.01 \left(\frac{\text{rHR} - 60.10}{10.45} \right) \left(\frac{\text{DBP} - 81.09}{9.32} \right) \\
& - 0.09 \left(\frac{\text{BMI} - 26.46}{3.50} \right) \left(\frac{\text{SBP} - 120.58}{12.70} \right) + 0.04 \left(\frac{\text{BMI} - 26.46}{3.50} \right) \left(\frac{\text{DBP} - 81.09}{9.32} \right) + 0.02 \left(\frac{\text{SBP} - 120.58}{12.70} \right)^2 \\
& - 0.06 \left(\frac{\text{SBP} - 120.58}{12.70} \right) \left(\frac{\text{DBP} - 81.09}{9.32} \right) + 0.01 \left(\frac{\text{DBP} - 81.09}{9.32} \right)^2 + 0.88(1 - \text{Smoking}) + 11.29
\end{aligned}$$

Women's algorithm

$$\begin{aligned}
\text{METs} = & -0.71 \left(\frac{\text{Age} - 44.11}{10.17} \right) + 0.09 \left(\frac{\text{Ht} - 164.62}{5.96} \right) - 0.63 \left(\frac{\text{rHR} - 64.02}{10.11} \right) - 0.75 \left(\frac{\text{BMI} - 23.31}{3.68} \right) + 0.17 \left(\frac{\text{SBP} - 112.42}{13.94} \right) - 0.10 \left(\frac{\text{Age} - 44.11}{10.17} \right)^2 \\
& - 0.07 \left(\frac{\text{Age} - 44.11}{10.17} \right) \left(\frac{\text{Ht} - 164.62}{5.96} \right) + 0.08 \left(\frac{\text{Age} - 44.11}{10.17} \right) \left(\frac{\text{rHR} - 64.02}{10.11} \right) + 0.10 \left(\frac{\text{Age} - 44.11}{10.17} \right) \left(\frac{\text{BMI} - 23.31}{3.68} \right) \\
& - 0.05 \left(\frac{\text{Age} - 44.11}{10.17} \right) \left(\frac{\text{SBP} - 112.42}{13.94} \right) + 0.02 \left(\frac{\text{Wt} - 63.21}{10.78} \right) \left(\frac{\text{rHR} - 64.02}{10.11} \right) + 0.02 \left(\frac{\text{Ht} - 164.62}{5.96} \right)^2 \\
& - 0.01 \left(\frac{\text{Ht} - 164.62}{5.96} \right) \left(\frac{\text{BMI} - 23.31}{3.68} \right) + 0.07 \left(\frac{\text{Ht} - 164.62}{5.96} \right) \left(\frac{\text{SBP} - 112.42}{13.94} \right) + 0.10 \left(\frac{\text{rHR} - 64.02}{10.11} \right)^2 \\
& + 0.05 \left(\frac{\text{rHR} - 64.02}{10.11} \right) \left(\frac{\text{BMI} - 23.31}{3.68} \right) - 0.02 \left(\frac{\text{rHR} - 64.02}{10.11} \right) \left(\frac{\text{DBP} - 76.04}{9.33} \right) + 0.01 \left(\frac{\text{BMI} - 23.31}{3.68} \right)^2 \\
& - 0.06 \left(\frac{\text{BMI} - 23.31}{3.68} \right) \left(\frac{\text{DBP} - 76.04}{9.33} \right) - 0.03 \left(\frac{\text{SBP} - 112.42}{13.94} \right) \left(\frac{\text{DBP} - 76.04}{9.33} \right) - 0.01 \left(\frac{\text{DBP} - 76.04}{9.33} \right)^2 + 0.77(1 - \text{Smoking}) + 9.07
\end{aligned}$$

Google sheet link:

<https://docs.google.com/spreadsheets/d/1lnYl4u62AMSUxkzyzKsKBHe8vr3WzLVRYxGyYE7xoGQ/edit#gid=1558519083>