**Title:** The effect of eight-days oral taurine supplementation on thermoregulation during low-intensity exercise at fixed heat production in hot conditions of incremental humidity

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Supporting information

*Equations list*

$$H_{dry\ skin} = C_{skin} + R_{skin} + K_{skin}\ [W] \quad \text{(equation 12)}$$

$H_{dry\ skin,}$ dry heat exchange at the skin surface; $C_{skin}$, convection; $R_{skin}$, radiation; $K_{skin}$, conduction

$$C_{skin} + R_{skin} = \frac{(t_{sk} - t_0)}{\left(R_{cl}\frac{1}{h \times fcl}\right)} \times A_D\ [W] \quad \text{(equation 13)}$$

$t_{sk}$, skin temperature; $t_o$, operative temperature; $R_{cl}$, dry heat transfer of clothing; h, combined convective heat transfer coefficient; $f_{cl}$, clothing area factor; $A_D$, body surface area

$$t_0 = \frac{h_r t_r + h_c t_a}{h_r + h_c}\ [W] \quad \text{(equation 14)}$$

$h_r$, radiative heat transfer coefficient; $t_r$, radiant temperature; $h_c$, convective heat transfer coefficient; $t_a$, ambient air temperature

$$h = h_c + h_r \ [W/m^2/K] \quad \text{(equation 15)}$$

$$h_c = 8.3 \times v_{air}^{0.6} \ [W/m^2/K] \quad \text{(equation 16)}$$

$V_{air}$, ambient air velocity

$$h_r = 4\,\varepsilon\,\sigma\frac{A_r}{A_D}\left(273.2 + \frac{t_{sk}+t_r}{2}\right)^3 \ [W/m^2/K] \quad \text{(equation 17)}$$

ε, non-dimensional emissivity of the body surface; σ, Stefan-Boltzmann constant; $A_r/A_D$, fraction of the body surface participating in radiative heat transfer

$$H_{res} = C_{res} + E_{res} \ [W] \quad \text{(equation 18)}$$

$H_{res}$, respiratory heat loss; $C_{res}$, convective respiratory heat loss; $E_{res}$, evaporative respiratory heat loss

$$C_{res} = 0.001516 \times M(28.56 + 0.641 \times Pa - 0.885 \times t_a) \ [W] \quad \text{(equation 19)}$$

M, metabolic energy expenditure; $P_a$, vapor pressure of inspired air

$$E_{res} = 0.00127 \times M(59.34 + 0.53 \times t_a - 11.63 \times Pa \ [W] \quad \text{(equation 20)}$$

$$Pa = \frac{6.116441 \times 10^{\left(\frac{7.5911386 \times t_a}{t_a + 240.7263}\right)} \times \frac{\%RH}{100}}{10} \ [kPa] \quad \text{(equation 21)}$$

%RH, relative humidity

$$\dot{E}_{max} = \frac{(P_{skin,sat} - P_a)}{R_{e,cl} + \frac{1}{h_e \times f_{cl}}} \times A_D \ [W] \quad \text{(equation 22)}$$

$R_{e,cl,}$ evaporative resistance of clothing;

$$P_{skin,sat} = \frac{\frac{(EXP(18.956-(4030.18)}{t_{sk}+235}}{10} \ [kPa] \quad \text{(equation 23)}$$

$$h_e = (16.5 \times h_c) \ [W] \quad \text{(equation 24)}$$

$$H_{evap\_skin} = WBSR \times \lambda \times \frac{S_{eff}}{60} \ [W] \quad \text{(equation 25)}$$

WBSR (whole-body sweat rate), based on body mass changes over time (g/min); λ is the latent heat vaporisation of sweat (2426 J/g)

$$S_{eff} = 1 - \frac{\omega_{req}{}^2}{2} \ [ND] \quad \text{(equation 26)}$$

$$\omega_{req} = \frac{\dot{E}_{req}}{\dot{E}_{max}} \ [ND] \quad \text{(equation 27)}$$

See Cramer and Jay (2019) for further information regarding partitional calorimetry, these equations and their components.

Cramer MN, Jay O (2019) Partitional calorimetry. Journal of Applied Physiology 126(2):267-77.