

Figure S1. Heart rate (HR) during Passive heat stress (40°C, 60% RH) and Active heat stress (repeated 4-min exercise intervals at ~90% HR<sub>max</sub> in a temperate environment (29.5°C, 50% RH)) to 3%  $\Delta$ BM with negligible fluid intake (P\_DEH; A\_DEH; Panel A) or ingestion of water matched to replace  $\Delta$ BM (P\_EUH; A\_EUH; Panel B). Data are Mean  $\pm$  SD for  $N = 12$ .

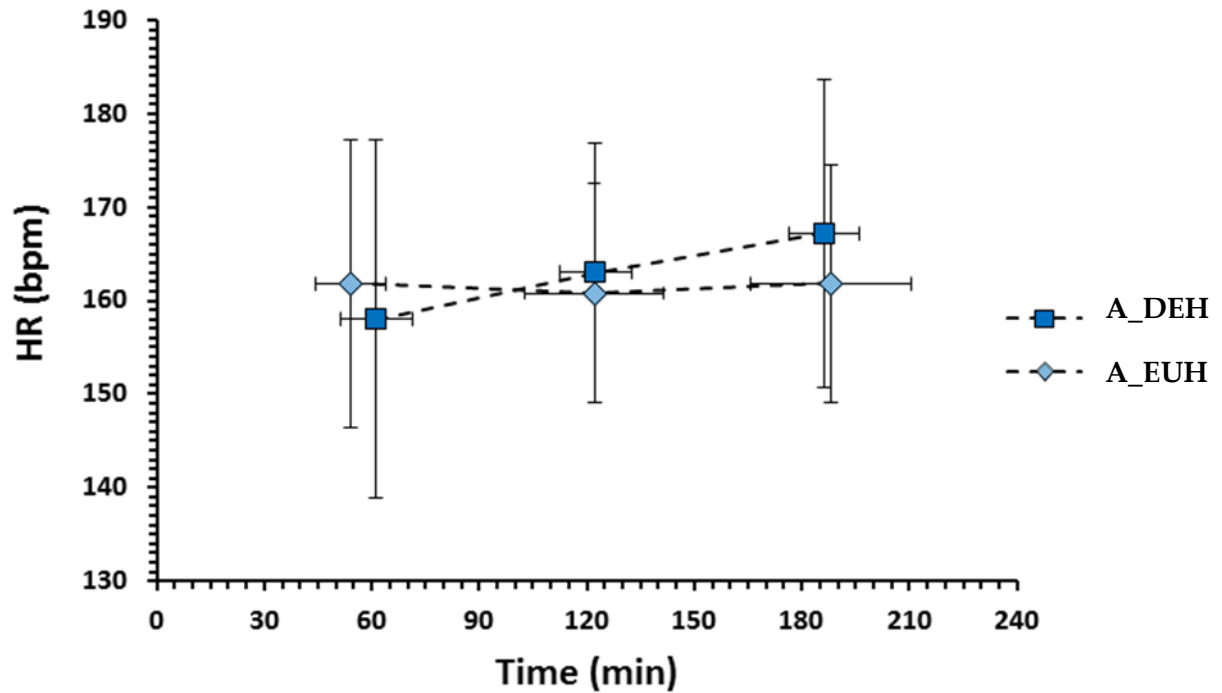


Figure S2. Heart rate (HR) during the 4<sup>th</sup> minute at a constant workrate within exercise intervals in which participants had negligible rehydration (A\_DEH) or fully replaced mass loss with water ingestion (A\_EUH). Data points are at each 1, 2 and 3% gross  $\Delta$ BM. Work rate was fixed and replicated across intervals and across trials for each participant (Mean 235 W for the cohort). Data are Mean  $\pm$  SD for  $N = 12$ .

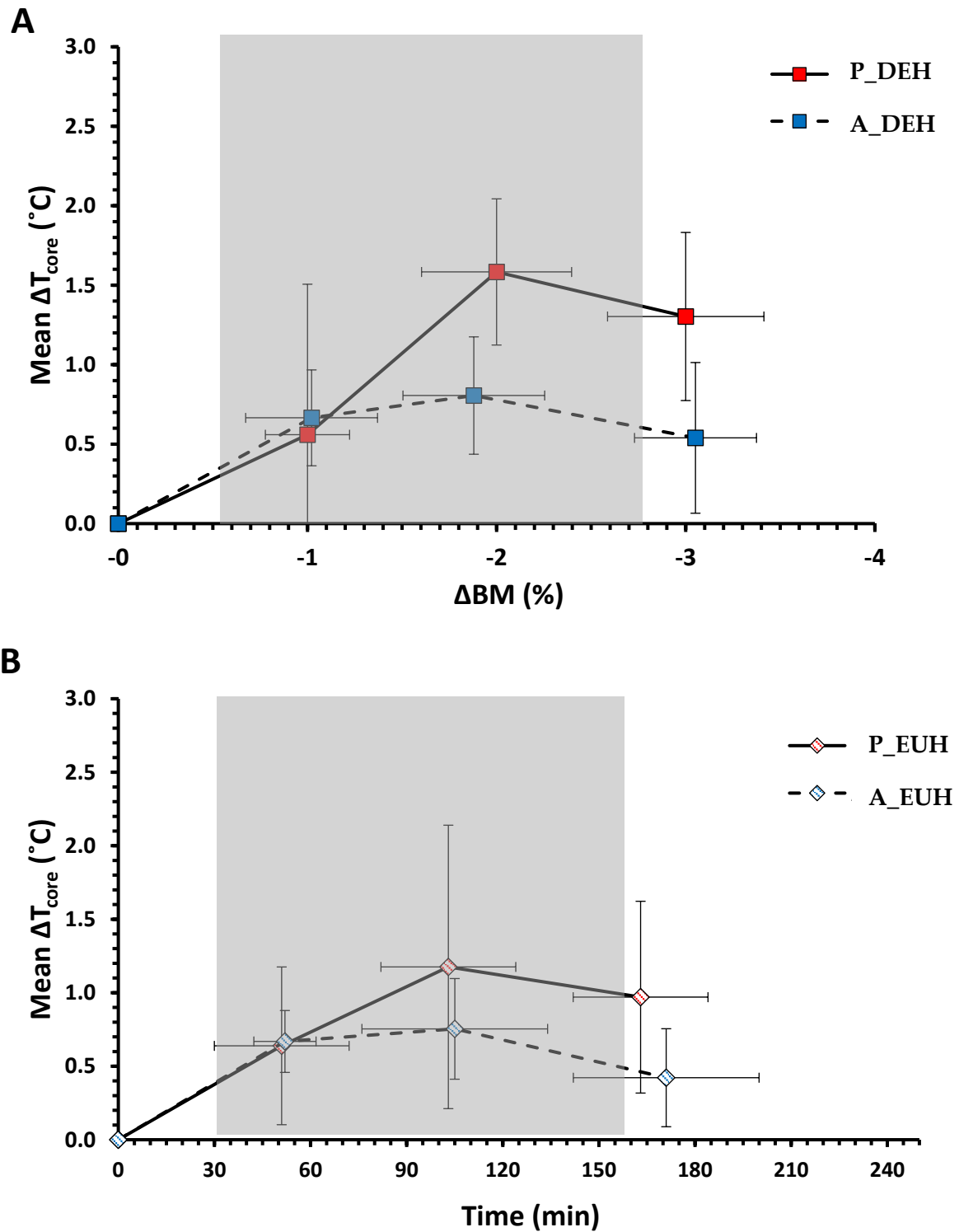
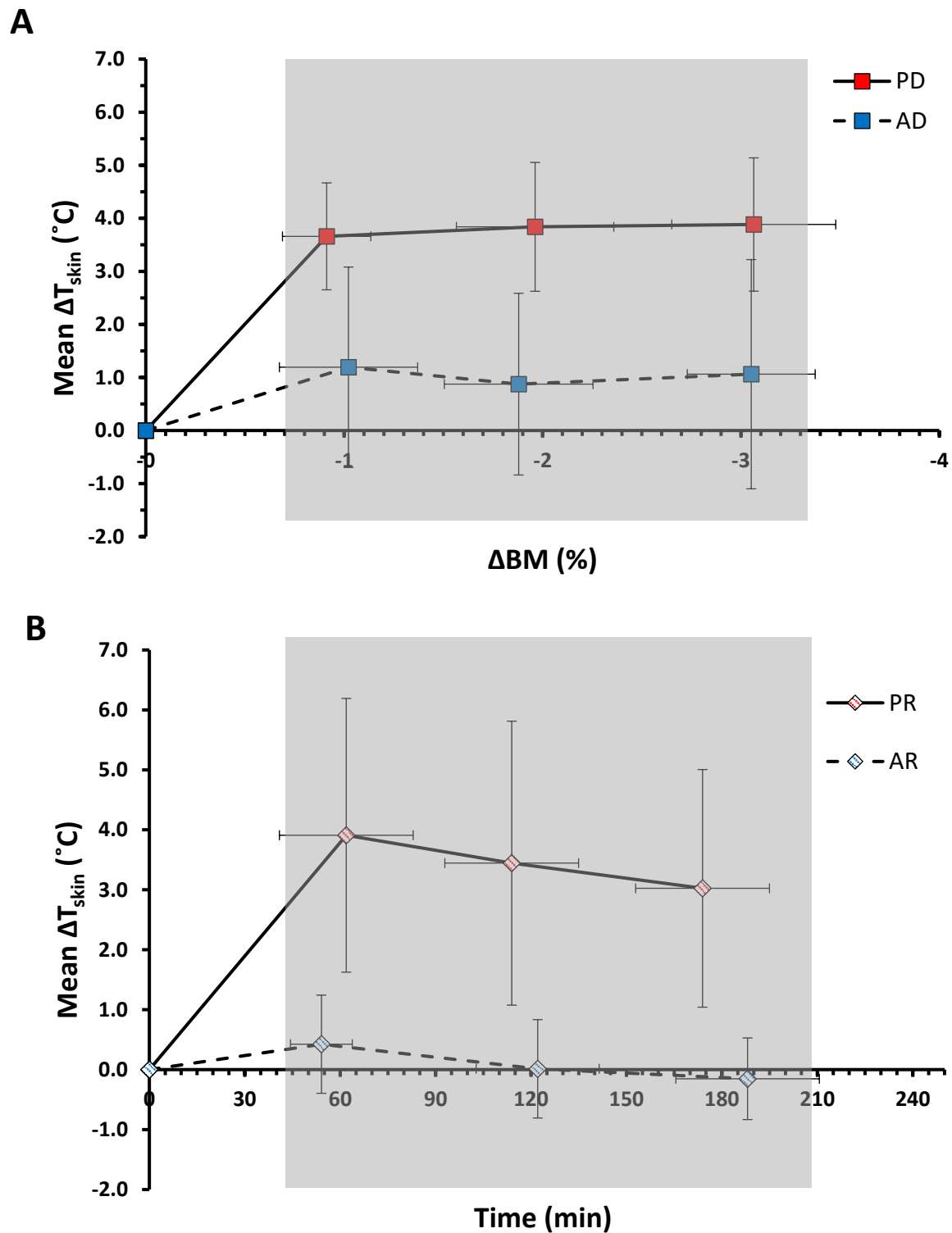


Figure S3. Change in rectal temperature from baseline ( $\Delta T_{\text{core}}$ ) during passive DEHydration (P-DEH: 40°C, 60% RH) and active DEHydration (repeated 4-min exercise intervals at ~90%  $\text{HR}_{\text{max}}$  in a temperate environment (Grey area: 29.5°C, 50% RH)) to 3%  $\Delta \text{BM}$  with negligible fluid intake (P\_DEH; A\_DEH; Panel A); or ingestion of water matched to replace  $\Delta \text{BM}$  (P\_EUH; A\_EUH; Panel B). The grey area represents the respective heat stress periods. The final data point is following 15 min seated in a temperate environment (see Section 3.2). Data are Mean  $\pm$  SD for  $N = 10$ .



*Figure S4.* Change in mean skin temperature from baseline ( $\Delta T_{\text{skin}}$ ) during Passive DEHydration (P-DEH: 40°C, 60% RH) and Active DEHydration (repeated 4-min exercise intervals at ~90%  $\text{HR}_{\text{max}}$  in a temperate environment (Grey area: 29.5°C, 50% RH)) to 3%  $\Delta \text{BM}$  with negligible fluid intake (P\_DEH; A\_DEH; Panel A); or ingestion of water matched to replace  $\Delta \text{BM}$  (P\_EUH; A\_EUH; Panel B). The grey area represents the respective heat stress periods (see Section 3.2). The skin thermistors were removed for exiting the climate chamber so no recovery data are obtained. Data are Mean  $\pm$  SD for  $N = 9$ .

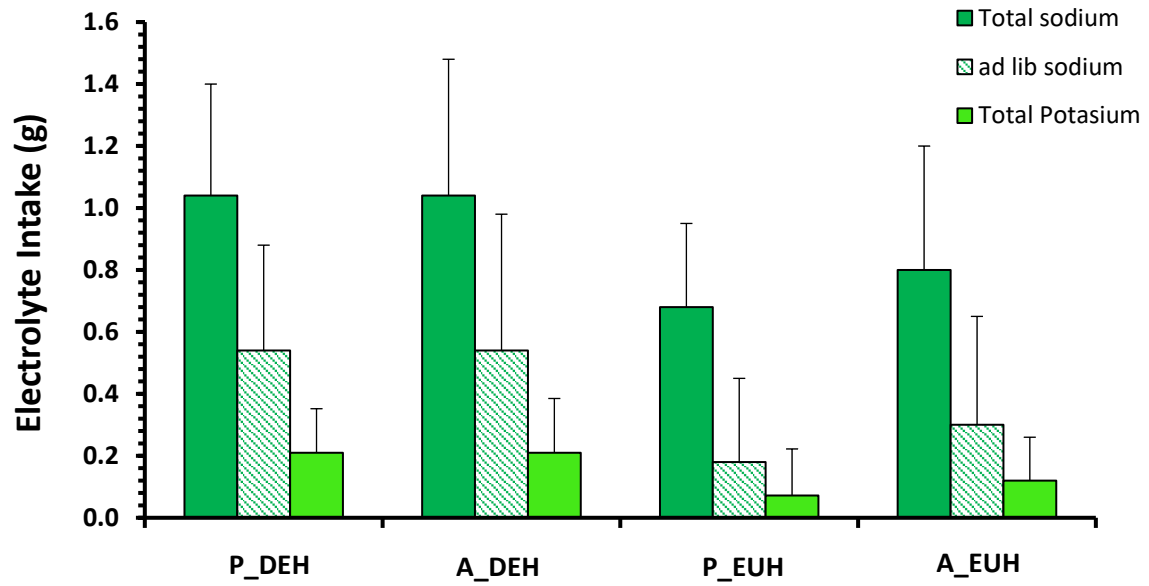


Figure S5. Total and *ad libitum* sodium and potassium during a 2-h rehydration period following DEHydration via Passive heat stress (P\_DEH: 40°C, 60% RH) or Active heat stress (A\_DEH: repeated 4-min exercise intervals at ~90% HR<sub>max</sub> in 29.5°C, 50% RH), versus with water intake matched to replace  $\Delta$ BM (P\_EUH and A\_EUH). Data are Mean  $\pm$  SD for  $N = 12$ .