



Correction: Circadian phenotype is associated with diurnal variation in human exercise performance

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In the original version of this article, all figure legends were incorporated into the main body of text rather than placing underneath the figure caption. The Figs. 1, 2 and 3 caption should have read

Fig. 1. Diurnal variation in exercise performance during a 10-min cycling time trial. Exercise performance outcomes measured during morning (AM) and evening (PM) trials in healthy young adults ($n=24$). (A) Mean power output (W) achieved during the 10-min time trial. (B) Peak power output (W) recorded during the time trial. (C) Total distance covered (km) during the time trial. Data are presented as individual responses with group mean $\pm$ SD overlaid. Each point represents a single participant, with paired observations shown for AM (orange) and PM (blue) conditions. Performance was significantly higher in the PM compared with the AM trial for all outcomes (paired t -tests): mean power (*** $p<0.0001$), peak power (*** $p=0.0005$), and distance covered (** $p=0.0049$).

Fig. 2. Associations between circadian phenotype and diurnal variation in exercise performance. Relationships between circadian phenotype and the diurnal difference in mean power output (PM–AM) during the 10-min cycling time trial ($n=24$). (A) Association between chronotype score (Composite Morningness Questionnaire, CMQ) and the diurnal difference in mean power output. A significant negative relationship was observed ($r=-0.47$, $p=0.019$), indicating that individuals with a more evening-oriented

chronotype exhibited greater improvements in performance in the PM condition. (B) Association between actigraphy-derived sleep midpoint and the diurnal difference in mean power output. A significant positive relationship was observed ($r=0.52$, $p=0.0093$), indicating that later sleep timing was associated with a greater PM–AM performance difference. In panels A and B, solid lines represent linear regression fits, with dashed lines indicating 95% confidence intervals. Each point represents an individual participant. (C) Diurnal difference in mean power output stratified by chronotype category (morning, intermediate, evening). Data are presented as individual responses with group mean $\pm$ SD overlaid. A significant main effect of chronotype was observed ($p=0.0082$), with a trend towards greater diurnal variation in evening-type individuals.

Fig. 3. Physiological responses to exercise during morning and evening trials. Physiological responses measured during the 10-min cycling time trial in morning (AM) and evening (PM) conditions ($n=24$). (A) Heart rate (bpm) recorded throughout the 10-min time trial. Values are presented as mean $\pm$ SD at each time point. Heart rate increased over time ($p<0.0001$), with no effect of time of day ($p=0.401$) and no interaction between time and condition ($p=0.495$). (B) Blood lactate concentration ($\text{mmol}\cdot\text{L}^{-1}$) measured pre- and post-exercise in AM and PM trials. Lactate increased significantly following exercise ($p<0.0001$), with no difference between conditions ($p=0.112$) and no interaction ($p=0.263$). (C) Association between sleep midpoint and the exercise-induced change in blood lactate (Δ lactate; post–pre). No significant relationship was observed ($r=-0.23$, $p=0.27$). Solid line represents linear regression, with dashed lines indicating 95% confidence intervals. (D) Core temperature ($^{\circ}\text{C}$) measured pre- and post-exercise in AM and PM trials. Core temperature increased significantly following exercise ($p<0.0001$), with a small but significant effect of time of day ($p=0.026$) and no interaction ($p=0.104$). (E) Rating of perceived exertion (RPE; Borg scale) measured pre- and post-exercise. RPE increased

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significantly following exercise ($p < 0.0001$), with no main effect of time of day ($p = 0.061$) but a small interaction effect ($p = 0.033$). In panels **B**, **D**, and **E**, data are presented as individual responses with group mean $\pm$ SD overlaid. Each point represents a single participant, with paired observations shown for AM (orange) and PM (blue) conditions.

The original article has been corrected.

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