HRV-based Recovery Across the Menstrual Cycle Using mysasy

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Abstract:

This study investigated changes in HRV-based recovery metrics across menstrual cycle phases and explored the influence of physiological factors and physical activity using mySASY. Twenty healthy women were monitored across two to four menstrual cycles. Phase differences in regeneration were tested using Kruskal–Wallis with Conover–Iman post-hoc comparisons (Holm correction). Effect sizes for pairwise contrasts were reported as Cliff's δ. Phase medians were as follows – Menstruation 7.1, Follicular phase 7.8, Ovulation 7.3, Luteal phase 6.9. The nonparametric test indicated small, but reliable phase effects (Kruskal–Wallis $H=21.62$, $p=7.83\times10^{-5}$; $\varepsilon^2=0.013$). The largest pairwise difference was Follicular vs Luteal (higher in Follicular): Cliff's $\delta=0.173$, $p_{(Holm)}=1.98\times10^{-5}$ ($n=366$ vs 675). Menstruation vs Follicular also differed (lower in Menstruation): $\delta=-0.126$, $p_{(Holm)}=0.046$ ($n=234$ vs 366). Other contrasts were not significant after Holm adjustment (e.g., Follicular vs Ovulation $\delta=0.121$, $p_{(Holm)}=0.115$). Thus, regeneration tended to be highest in the follicular phase and lowest in the luteal phase, with small effect sizes ($\varepsilon^2\approx0.013$; $|\delta|\leq0.173$). In conclusion, mySASY system provides modest and inconsistent cycle-phase effects at the group level, however, it can be a powerful device for regeneration estimation at the individual level.