Thermal preference, energy balance and growth in *Hippocampus erectus* (Perry, 1810): the effect of gradually increasing temperature during exposure.

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Research in thermal biology has consistently shown that acclimation temperature determines the thermal tolerance and preference of marine ectotherms. Given that time of exposure is central in defining any acclimation regime, we tested the hypothesis that juvenile *Hippocampus erectus* would exhibit variations in relevant descriptors of its thermal biology when submitted to three contrasting temperature regimes during 30 days: temperature constant at 25°C (C25); increasing gradually at 1°C every 5 days from 25-30°C (R25-30); and constant (C30). Immediately after exposure, components of partial energy balance, oxygen consumption, thermal preference, critical maximum temperature, specific growth rate and survival of all seahorses were evaluated. Seahorses from treatments R25-30 and C25 were statistically similar regarding survival, growth, thermal preference, and energy produced/energy assimilated. However, seahorses from treatment R25-30 presented significantly higher growth (1.10 ± 0.49%), survival (97.7%), energy produced / assimilated (86.2%) and critical maximum temperature (37.8 ± 0.9°C), but lower thermal preference (28.7 ± 0.4°C), than those in the C30 treatment (growth 0.48 ± 0.32%; survival 73.6%; energy produced/assimilated 60%; critical maximum temperature 36.5 ± 1°C, and thermal preference 29.4 ± 0.3°C, respectively). When temperature is increased gradually, seahorses display physiological and behavioral mechanisms of thermal adjustment that do not take place when temperature changes abruptly and is kept constant at 30°C. The study of seahorse response to thermal variations in the context of ocean warming needs to consider the temporal elements of thermal exposure to better understand and foresee the vulnerability of its populations under future scenarios.

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