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Performance analysis of an elite-level E-Cycling competition

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INTRODUCTION:
E-cycling is an emerging discipline that became particularly popular during the COVID-19 pandemic [1]. Despite the increasing interest of national and international federations, the performance-specific characteristics of a high-level E-cycling competition remain to be elucidated. In the present study, we evaluated the performance and characteristics of athletes competing in the first French national championship of E-cycling.
METHODS:
The competition took place in February 2023 in an indoor stadium with 46 participants, which was the largest face-to-face E-Cycling event ever organized. The event was performed on the Zwift platform (https://www.zwift.com). The cyclists used their own bike and the same power trainer (Wahoo KICKR V6, Wahoo Fitness, Atlanta, United States). They were divided into categories A, B or C based on their past performance, and competed in two races (22 km and 21 km), separated by 15 min. For the present study, we analyzed the performance of seven male athletes competing in the first category (A, 66 ± 6 Kg, 1.75 ± 0.03 m, 31 ± 12 years old) and seven male athletes competing in the second category (B, 72 ± 5 Kg, 1.77 ± 0.05 m, 45 ± 11 years old). We compared personal best records of 15 s, 5 min and 20 min over the last 3 months (virtual) and the percentage of their personal bests during the races.
RESULTS:
Personal best records normalized to body mass were greater for category A than category B athletes (15 s: 12.7 ± 2 vs. 9.8 ± 1.9 W/kg; 5 min: 5.5 ± 0.6 vs 4.6 ± 0.4 W/kg; 20 min: 4.8 ± 0.4 vs 4.1 ± 0.3 W/kg; all $p < 0.05$). Work was greater in race 1 (7.3 ± 0.7 kJ/kg) than race 2 (5.4 ± 1.6 kJ/kg, $p < 0.001$) and in category A (7.0 ± 1.0 kJ/kg) than category B (5.8 ± 1.7 kJ/kg, $p = 0.03$). Performance that was expressed as percentage of the personal best showed no effect of category for all time intervals considered. Lower performance was systematically observed in race 2 over a period of 5 min (95 ± 8% vs 85 ± 8%, $p = 0.004$) and 20 min (92 ± 9% vs 83 ± 6%, $p = 0.001$) but not 15 s (83 ± 14% vs 74 ± 11%, $p = 0.09$).
CONCLUSION:
Overall, performance during the second competition was lower compared to the first one. This was probably due to the effect of fatigue cumulated in the first competition which can affect the ability to produce high levels of power output. Athletes in category A were younger and showed better performance than category B athletes, both in terms of personal bests and performance during the race (work). However, the two groups showed a similar performance during the races when expressed in percentage of their personal bests measured in similar conditions (E-cycling). These results could be useful to inform coaches and E-cycling race organizers.
REFERENCE
McIlroy et al., Front. sports act. Living, 2021

Topic: **Statistics and Analyses**

Presentation **Poster**