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Training characteristics and race-relative intensity distribution of elite team pursuit cyclists

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INTRODUCTION:

The training process involves the systematic planning and execution of exercises to develop athletic qualities and performance. Team pursuit track cyclists require highly developed aerobic, anaerobic, and neuromuscular capacities to repeatedly and extensively produce the required power output to execute the race strategy. This study aimed to profile the general training characteristics of an elite team pursuit cycling squad relative to their own world-record performance power and torque demands.

METHODS:

Training data of five male track endurance cyclists (mean \pm SD age 21.9 ± 3.52 y; 4.4 ± 0.16 W.kg⁻¹ @ LT2; 6.2 ± 0.28 W.kg⁻¹ @ VO₂peak; peak oxygen uptake 68.7 ± 2.99 mL.kg.min⁻¹) were analysed across a 36-week preparation period. Training intensity distribution for power and torque were calculated with reference to the athletes' subsequent world-record performance (3:49.804 min:sec.ms) demands for the 4-km team pursuit (i.e., WR Lead [wheel 1], WR Average [wheel 1-4], WR Follow [wheel 2-4], along with variations in weekly total training volume by activity type, and training gear and pace evolution.

RESULTS:

Across 436 ± 16 sessions during the 36-week period, athletes completed 543 ± 37 hours of training activities (e.g., track, road, ergometer, gym), with 11246 ± 1140 km total distance cycled. Seventy percent of on-bike training was performed at low-intensity power output (below LT1), with 7.7% performed at high intensities (above LT2). Torque demands for WR Lead, Average, and Follow were 55, 45, and 39 Nm, respectively. Athletes accumulated 4.4% of on-bike load above WR Lead torque requirements (55 Nm), with a further 4.7% above WR Average (45 Nm) and 5.6% above WR Follow (39 Nm).

CONCLUSION:

These data provide valuable insight to the training characteristics of a recent world-record team pursuit squad. The development of anaerobic and neuromuscular capacities was a major component of these athletes' training, which differs from previous descriptive studies of elite team pursuit cyclists. The findings also present novel quantification of race pace-relative intensity distribution for team pursuit power and torque demands, which may have relevance to coaches and practitioners in training prescription. General intensity distribution observed was not dissimilar to those reported in other endurance sports, although there was limited shift toward a polarised distribution in the competition taper.

Topic: Training and Testing

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