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The effect of crank inertial load on the physiological and biomechanical responses of trained cyclists.

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The existing literature suggests that crank inertial load has little effect on the responses of untrained cyclists. However, it would be useful to be aware of any possible effect in the trained population, particularly considering the many laboratory-based studies that are conducted using relatively low-inertia ergometers. Ten competitive cyclists (mean VO(2max) = 62.7 ml x kg(-1) x min(-1), s = 6.1) attended the human performance laboratories at the University of Wolverhampton. Each cyclist completed two 7-min trials, at two separate inertial loads, in a counterbalanced order. The inertial loads used were 94.2 kg x m(2) (high-inertia trial) and 2.4 kg x m(2) (low-inertia trial). Several physiological and biomechanical measures were undertaken. There were no differences between inertial loads for mean peak torque, mean minimum torque, oxygen uptake, blood lactate concentration or perceived exertion. Several measures showed intra-individual variability with blood lactate concentration and mean minimum torque, demonstrating coefficients of variation > 10%. However, the results presented here are mostly consistent with previous work in suggesting that crank inertial load has little direct effect on either physiology or propulsion biomechanics during steady-state cycling, at least when cadence is controlled.