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SCI 145 The relationship between workload at functional threshold power and maximal lactate steady state in male amateur triathletes

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Introduction: Functional threshold power (FTP), when cycling, is purported to be the maximum power output that can be maintained for a one hour effort. FTP is typically computed by assessing mean power output over 8 or 20 min maximal time-trial efforts, namely 90 and 95% of mean power, respectively. This measurement resembles the more traditional physiological measurement of maximum lactate steady state (MLSS). MLSS is defined as the highest blood lactate concentration (MLSSc) and associated work load (MLSSw) that can be maintained over 30 min without a continuous increase in blood lactate accumulation, maximal rate of increase in $BLa < 0.05 \text{ mmol.L}^{-1} \cdot \text{min}^{-1}$ from 10 to 30 min. The current study assessed the equivalence, if any, between FTP and MLSSw. **Methods:** Assessments, performed on male triathletes ($n=11$), included quantification of lactate threshold using a graded incremental test, quantification of FTP using 8 and 20 min maximal time-trial efforts and a 30 min steady-state test at the computed FTP based on 8 min time-trial to compute lactate kinetics. To date, 5 volunteers have completed all 4 test elements. **Results:** An interim results analysis revealed that performing a 30 min steady-state test at computed FTP over-estimated MMLSSw; all volunteers exhibited non steady-state lactate ($BLa/ t > 0.05 \text{ mmol.L}^{-1} \cdot \text{min}^{-1}$) kinetics. In addition, FTP based on the 8 min time-trial ranged from 12 to 21% higher than FTP based on the 20 min time-trial. **Conclusion:** caution should be advised when using FTP as a quantifier of exercise capacity or as a longitudinal monitor of training induced improvements in amateur triathletes.