

ABSTRACT

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Purpose: To validate and test reliability of a new maximal steady state (MSS) protocol for trained cyclists. **Methods :** Subjects (N = 33) were trained cyclists divided into four groups: elite males (EM), elite females (EF), competitive males (CM), and competitive females (CF). Each subject performed three trials (T1, T2, T3): the new protocol twice, and a 20km time trial (TT). A minimum of four days separated each trial. Heart rate (HR) and workload (WL) data from T1 were used to predict the criterion score: T3 average HR and WL (representing MSS). **Results:** T1 HR and WL correlated highly to T3 HR and WL ($r = 0.956$ & 0.982 , $P < 0.000$). Both variables were highly repeatable between T1 and T2 ($r = 0.942$ & 0.988 , $P < 0.000$). T1 Rating of perceived exertion (RPE) was not predictive of HR or WL in T3, except for WL in the EM group ($r = 0.808$, $P < 0.015$). RPE also showed low repeatability ($r = 0.59$, $P < 0.000$) between T1 and T2. **Conclusion:** The new protocol is a valid and reliable test when using HR or WL data to predict HR or WL in a 20km TT performance. RPE showed little significance in its reliability or predictive value. **Key Words:** LACTATE THRESHOLD, PERFORMANCE TESTING, HEART RATE, POWER MEASUREMENT